3rd Biennial Conference of the South Asian Association of Physiologists (SAAP-3)

in conjunction with the

25th Anniversary of the Physiological Society of Sri Lanka (PSSL)

Abstract Book

07th - 10th November 2012
Sri Lanka

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Scientific Programme

Pre-Congress Workshop on Physiology Teaching

Venue : Faculty of Medicine, University of Colombo

'Colombo 2012: Linking Teaching and Learning Physiology'

In collaboration with the education committee of International Union of Physiological Sciences (IUPS)

Organised by Prof. Arif Siddiqui, PhD

Secretary General, SAAP
Member, IUPS Education Committee
Member, Executive Council, FAOPS
Associate Dean, Education
Head, Department of Physiology
Riphah International University
274 Peshawar Road, Rawalpindi, Pakistan

November 7: Plenary & Break-out sessions
November 8: Plenary sessions as part of main conference

Programme

Time	Topic	Speaker/ Facilitator	Venue	Chairpersons
08.30-09.00 am	**Registration**		**New Building Lecture Theatre – Block C**	
09.00-09.10 am	Opening Remarks	Prof. Amar K Chandra (India)	New Building Lecture Theater – Block C	Prof. Mangala Gunatilake Prof. Arif Siddiqui
09.10-09.30 am	Role of Faculty in Teaching & Learning	Prof. Robert G Carroll (USA)		
09.40-10.00 am	Staying Competent and Relevant as Medical/ Healthcare Educators: Beyond Paper Qualifications	Dr. Dujeepa Samarasekera (Singapore)		

10.00-10.30 am	**Tea Break**		**Dept. of Physiology – Block D**	
10.30-11.45 am	**Break-out sessions** 1. Interactive Teaching (including use of audience response software during class i.e. e- learning)	Dr. Mario Vaz (India)	Physiology Lecture Theater – Block D	
	2. Practical Laboratories - Converting Traditional Experiments to Inquiry-based Labs	Prof. Barbara Goodman (USA)	New Building Lecture Theater – Block C	
	3. Moving From Learning Objectives to Competencies	Prof. Dee U Silverthorn (USA)	Pharmacology Seminar Room	
	4. Engaging Our Students for Thinking Through Physiology	Prof. Hwee Ming Cheng (Malaysia)	Physiology Office-Block D	
	5. Motivating Students' Learning of Physiology Concepts: Use of Clinical Correlates as Effective Tools	Prof. Tehseen Iqbal (Pakistan)	Board Room – Block A	
Time	**Topic**	**Speaker/ Facilitator**	**Venue**	**Chairpersons**
11.45-12.15 pm	**Reconvene to share outcome of Break-out Sessions**	Dr. Mario Vaz Prof.Barbara Goodman Prof.Dee U Silverthorn Prof. Hwee Ming Cheng Prof. Tehseen Iqbal	New Building Lecture Theater – Block C	Prof. Mangala Gunatilake Prof. Robert G Carroll
12.15-12.35 pm	Promoting Optimal Approaches to Learning and Studying	Dr. Piyusha M Atapattu (Sri Lanka)	New Building Lecture Theater – Block C	Prof. Kusal Das

12.35-01.15 pm	**Lunch**		**Dept. of Physiology – Block D**	
01.15-01.35 pm	Evaluation of Student Learning	Prof. Dee U Silverthorn (USA)	New Building Lecture Theater – Block C	Prof. Manish Bajpai
01.35-02.50 pm	**Break-out sessions** **6.** Assessment System in Physiology 7. Multiple Choice Questions: Design and Evaluation 8. Adapting OSCEs to Assess Physiology Competencies 9. Evaluation of Educational Programs: Why, How, Who and When 10. Evaluation of Faculty Teaching Effectiveness	 Prof. Ruhul Amin (Bangladesh) Prof. Sheilla Pinjani (Pakistan) Dr. Ahmed Badar (Saudi Arabia) Prof. Bishnu H Paudel (Nepal) Prof. Dujeepa Samarasekera (Singapore)	 Physiology Lecture Theater – Block D New Building Lecture theater – Block C Pharmacology Seminar Room Physiology Office-Block D Board Room – Block A	
02.50-03.15 pm	**Reconvene to share outcome of Break-out Sessions and disperse**	Prof. Ruhul Amin Prof. Sheilla Pinjani Dr. Ahmed Badar Prof. Bishnu H Paudel Dr. Dujeepa Samarasekera	New Building Lecture Theater – Block C	Prof. Mangala Gunatilake Prof. Robert G Carroll

Inauguration Programme

5.45 pm	Guests take their seats Arrival of the Chief Guest and Guest of Honour
6.00 pm	Ceremonial Procession
6.05 pm	National Anthem
6.10pm	Lighting of the Traditional Oil Lamp
6.20 pm	Welcome Address – Prof. Sharaine Fernando President, Physiological Society of Sri Lanka and Chairperson of SAAP-3 Conference Organizing Committee
6.30 pm	Address by the President of SAAP - Prof. Amar K. Chandra
6.40 pm	Address by the Guest of Honour - Dr. Firdosi Rustom Mehta Country Representative – WHO
6.50 pm	Address by the Chief Guest - Dr. Narada Warnasuriya Former Vice Chancellor – University of Sri Jayewardenepura
7.00 pm	Felicitation of Distinguished Sri Lankan Physiologists Professor Valentine Basnayake: Emeritus Professor of Physiology, Faculty of Medicine, University of Peradeniya Professor Carlo Fonseka Emeritus Professor of Physiology, Faculty of Medicine, University of Kelaniya Professor Colvin Goonaratne Emeritus Professor of Physiology, Faculty of Medicine, University of Colombo Professor Malini Udupihille Emeritus Professor of Physiology, Faculty of Medicine, University of Peradeniya
7.30 pm	Presentation of the K.N. Seneviratne Memorial Award
7.35 pm	Vote of Thanks – Dr. Piyusha Atapattu Secretary–SAAP 3 Conference Organizing Committee
7.40pm	**K. N. Seneviratne Memorial Oration** "Non-Alcoholic Fatty Liver Disease: The Challenge Before Us" Vidyajothi Prof. H. J. de Silva MD, DPhil (Oxon), FRCP, FCCP, Hon. FRACP Senior Professor and Chair of Medicine, Faculty of Medicine, University of Kelaniya, Sri Lanka
8.20pm	The Procession Leaves the Hall
8.25pm	Cultural Programme
8.40pm	Reception

Conference Programme Day 2 - 8th November 2012
Hotel Taj Samudra, Colombo, Sri Lanka

08.30-09.00am	*Chairpersons: Prof. V. Weerasinghe/Prof. Amar Chandra* **Plenary Lecture 1** Reflex epilepsies and their physiological basis **Prof. Nimal Senanayake (Hall A)**	
9.00-10.00am	*Chairpersons: Prof. V. Weerasinghe/Prof. Amar Chandra* **Recent advances in neurophysiology** **(Hall A)**	*Chairpersons: Prof. Uday Goshal/ Dr. Mario Vaz* **Pathophysiology of hepatic cholestasis** **(Hall B)**
	• Single fibre electromyography **Prof. E. Mike Sedgwick** • Use of event-related potentials in the study of sub-clinical cognitive effects of organophosphates **Dr. Tharaka Dassanayake** • Executive Function tasks: A promising tool to assess brain functions? **Dr. Chandana Hewage**	• Pathophysiology of cholestatic liver cell injury **Prof. Janaki Hewavisenthi** • Cholestatic liver injury and the liver brain inflammatory axis **Dr. Dinithi Fernando** • Management of extrahepatic biliary obstruction- risk/ benefits of deranged physiology from minimal access approach **Prof. Mohan de Silva**
10.00-10.30am	**TEA AND POSTER VIEWING**	
10.30-11.30am	*Chairpersons: Prof. Muhammed Aslam/Dr. Chandana Hewage* Free paper session (1) **(Hall A)**	*Chairpersons: Prof. H.R. Ahmad/ Dr. Niranga Devanarayana* Free paper session (2) **(Hall B)**
11.30-12.00pm	*Chairpersons: Prof. Saadat Ali Khan/Dr. Bishnu Paudel* **Plenary Lecture 2 -** Advances in Gastro-intestinal motility assessment **Prof. Uday C. Ghoshal** **(Hall A)**	
12.00-01.00pm	*Chairpersons: Prof. Saadat Ali Khan/Dr. Bishnu Paudel* **The gut and its connections** **(Hall A)**	*Chairpersons: Dr. Sampath Gunawardena/ Prof. Syed Tousif Ahmed* **Moving points in cardiovascular physiology** **(Hall B)**
	• The brain gut axis **Dr. Niranga Manjuri Devanarayana** • Insight into mechanisms underlying the relationship between the oesophagus and the airways **Dr. Lakmali Amarasiri** • Bowel fermentation **Prof. Priyadharshika Hettiarachchi**	• Pericardial fluid and serum NT-PRO-BNP in heart failure **Prof. H. R. Ahmad** • Autonomic function testing in cardiovascular physiology **Prof. Rita Khadka** • What is normal blood pressure? An update. **Prof. Rifdy Mohideen**

1.00-2.00pm	**LUNCH and POSTER VIEWING**	
2.00-2.30pm	*Chairpersons: Prof. Abdul Saeed/Dr. Lakmali Amarasiri* **Plenary Lecture 3** - A review on pulmonary vagal afferent receptors **Dr. Sampath Gunawardena** **(Hall A)**	
2.30-3.30pm	*Chairpersons: Prof. Abdul Saeed/Dr. Dilshani Dissanayake* **Lungs in health and disease** **(Hall A)**	*Chairpersons: Prof. Taj Muhammad Khan /Prof.Mangala Gunatilake* **Symposium on physiology teaching** **(Hall B)**
	• Update on pulmonary physiology and pathophysiology **Prof. Malini Udupihille** • Spirometry at the Central Chest Clinic Colombo; clinical correlates **Dr. Kirthi Gunasekera** • Screening for occupational respiratory Disease – role of South Asian physiologists **Prof. Savithri Wimalasekera**	• Educational scholarship **Prof. Robert G. Carroll** • Integrated practical examination (IPE) in basic health sciences (BHS) **Prof. Muhammad Aslam** • Outreach models to promote physiology **Prof. Barbara E. Goodman** • Summary and Next Steps **Prof. Arif Siddiqui**
3.30- 5.00pm	*Chairpersons: Prof. Sheila Pai/ Prof. Rita Khadka* Free paper session (3) **(Hall A)**	*Chairpersons: Prof. A. Dissanayake/Prof. Ruhul Amin* Free paper session (4) **(Hall B)**
5.00 – 5.30pm	**TEA AND POSTER VIEWING**	
5.45 pm (Hall A)	**A. C. E. Koch Memorial Oration** **"Evoked Potentials as Functional Scalpels of the Human Brain"** **Prof. Vajira Weerasinghe, PhD** Professor of Physiology, Faculty of Medicine, University of Peradeniya & Consultant Neurophysiologist, Teaching Hospital, Peradeniya, Sri Lanka	
6.45 pm	SAAP Council meeting	

Conference Programme Day 3 - 9th November 2012
Hotel Taj Samudra, Colombo, Sri Lanka

8.30-9.00am	*Chairpersons: Dr. Indu Nanayakkara/ Prof. Muhammad Akram* **Plenary Lecture 4 -** Nutrition transition and body composition: the Asian paradox **Dr. Angela de Silva** **(Hall A)**	
9.00-10.00am	*Chairpersons: Dr. Indu Nanayakkara/ Prof. Muhammad Akram* **Nutrition** **(Hall A)**	*Chairpersons: Prof. Savithri Wimalasekera/*Prof NS Verma *Muhammad Soomro* **Exercise physiology** **(Hall B)**
	• Alpha-tocopherol (Vitamin E) in serum - uses and assessment **Prof. Kusal K. Das** • Diet and cancer : An overview **Prof. Shyamal Roy Choudhury** • Adipose tissue as an endocrine organ **Dr. N. Sudheera Kalupahana**	• Benefits and problems of exercise **Prof. K Sivapalan** • Maximal oxygen consumption (VO_2max) – an important measure of aerobic capacity **Dr. Shamila Rajaratne** • Success in sports: achieving through an evidence based approach **Dr. Sudharshani Wasalathanthri**
10.00-10.30am	**TEA AND POSTER VIEWING**	
10.30-11.30am	*Chairpersons: Dr. Angela de Silva/Dr. PPR Perera* Free paper session (5) **(Hall A)**	*Chairpersons: Dr. Dinithi Fernando/ Prof. Priyadharshika Hettiarachchi* Free paper session (6) **(Hall B)**
11.30-12.00pm (Hall A)	*Chairpersons: Prof. Manish Bajpai/ Prof. Kusal K. Das* **Plenary Lecture 5 –** Iodine deficiency in South East Asia **Prof. Amar K. Chandra** **(Hall A)**	
12.00-1.00pm	*Chairpersons: Prof. Manish Bajpai/ Prof. Kusal K. Das* **Insights in to insulin resistance and its management** **(Hall A)**	*Chairpersons: Prof. Noorzham Begum/ Prof. Susirith Mendis* **A review of the pathophysiology of kidney disease** **(Hall B)**
	• Monogenic diabetes : molecular insights into the aetiology of diabetes **Dr. Deepthi De Silva** • Insulin resistance in adults and therapeutic interventions **Dr. Prasad Katulanda** • Insulin resistance in childhood **Prof. Pujitha Wickramasinghe**	• Cost effective & harmless management of kidney disease through phytotherapy, bacteriotherapy and functional foods on experimental animal **Dr. Dilip Nandi** • Snake venom and its effects on the kidney **Prof. Ariaranee Gnanathasan** • Clinical assessment of the lower urinary tract – back to basics **Prof. Srinath Chandrasekara**

1.00 -2.00pm	**LUNCH AND POSTER VIEWING**	
2.00 - 2.30pm	*Chairpersons: Prof. Arif Sidiqqui/Dr. Ahamed Badar* **Plenary Lecture 6 -** Physiology in the molecular era **Prof. Kamani H. Tennekoon** **(Hall A)**	
2.30 - 4.00pm	*Chairpersons: Prof. Farman Ulla Wazir/Dr. Himansu Waidyasekera* Free paper session (7) **(Hall A)**	*Chairpersons: Prof. Vajira Weerasinghe/ Dr. RSJ Lenora* Free paper session (8) **(Hall B)**
4.00-4.30pm	**TEA AND POSTER VIEWING**	
4.30-5.30pm	*Chairpersons: Prof. K. Tennekoon/ Prof. Muhammed Aslaam* **Exogenous factors and male fertility** **(Hall A)**	*Chairpersons: Prof. Colvin Gunaratne/ Dr. Piyusha Atapattu* **Wider perspectives in physiology – the experience from Sri Lanka** **(Hall B)**
	• An update of environmental factors affecting male fertility **Prof. Sharaine Fernando** • The effect of oxidative stress and antioxidants on sperm function **Dr. Indu Nanayakkara** • Options available for severe male subfertility. **Prof. Athula Kaluarachchi**	• A short review on placental transfer of thyroid hormones **Prof. Susirith Mendis** • Antioxidants from herbs and spices : Potential health benefits **Prof. Ira Thabrew** • **'The Valentine Basnayake endowment lecture on everyday physiology'** Coconut and ischaemic heart disease: Fact of Fiction? **Dr. Asoka S. Dissanayake**
5.30pm	Closing Ceremony	
5.45pm	SAAP General Assembly	

Parallel Post-Congress Workshops in Kandy and Galle

Day 4 -10th November 2012

Post-Congress Workshop 1
Clinical Neurophysiology Unit, Faculty of Medicine, University of Peradeniya

Clinical Neurophysiological Techniques:
Electromyography (EMG), Evoked Potentials and Magnetic Stimulation

- **Venue:** Department of Physiology, Faculty of Medicine, University of Peradeniya (Skills lab, Seminar Room and Laboratories)

- **Aims:**
  1. To provide an overview of theory and applications of clinical neurophysiological techniques
  2. To demonstrate how EMG, evoked potential and magnetic stimulation techniques are performed

- **Resource Persons:**
  1. Prof. Nimal Senanayake MBBS,MD,FRCP,PhD,DSc, Senior Professor of Medicine and Consultant Physician, Faculty of Medicine, University of Peradeniya
  2. Prof. Mike Sedgwick MBBS,MD,FRCP, Professor in Clinical Neurophysiology and Consultant Neurophysiologist, University of Southampton, UK and Visiting Professor, Department of Physiology, Faculty of Medicine, University of Peradeniya
  3. Prof. Vajira Weerasinghe BDS,MPhil,PhD, Professor of Physiology and Consultant Neurophysiologist, Faculty of Medicine, University of Peradeniya
  4. Dr. Tharaka Dassanayake MBBS,MPhil,PhD, Senior Lecturer in Physiology, Faculty of Medicine, University of Peradeniya

Practical demonstrations will be interactive sessions using EMG, EP machines and magnetic stimulator available in the Neurophysiology lab of the Department of Physiology, Faculty of Medicine, University of Peradeniya with participation of patients and volunteers as subjects. There will be multimedia presentations during the group work sessions. Registered participants will be provided with tea, lunch, handouts, CDs and workshop file.

Contact details: Prof. Vajira Weerasinghe, Department of Physiology, Faculty of Medicine, University of Peradeniya. Telephone: 0777-841707, 071-8248805, email: vajira54@yahoo.com

Programme

09.00 – 09.30am Registration and Breakfast

09.30 – 09.40am Introduction to the workshop: **Prof. Nimal Senanayake**

09.40 – 10.00am Theory and applications of neurophysiological techniques:
Prof. Vajira Weerasinghe

10.00 – 11.00am Practical demonstrations and group work

Group A: EMG techniques including single fibre EMG : **Prof. Mike Sedgwick**
Group B: EPs including cognitive ERPs : **Dr. Tharaka Dassanayake**
Group C: Magnetic stimulation and other techniques: **Prof. Vajira Weerasinghe**

11.00 – 11.15am Tea

11.15 – 12.15am Practical demonstrations and group work (contd): Groups A,B, and C

Group A: EPs including cognitive ERPs : **Dr. Tharaka Dassanayake**
Group B: Magnetic stimulation and other techniques: **Prof. Vajira Weerasinghe**
Group C: EMG techniques including single fibre EMG : **Prof. Mike Sedgwick**

12.15 – 01.15pm Lunch

01.15 – 02.15pm Practical demonstrations and group work (contd): Groups A,B, and C

Group A: Magnetic stimulation and other techniques: **Prof. Vajira Weerasinghe**
Group B: EMG techniques including single fibre EMG : **Prof. Mike Sedgwick**
Group C: EPs including cognitive ERPs : **Dr. Tharaka Dassanayake**

02.15 - 02.45pm General Discussion: **Prof. Vajira Weerasinghe**

02.45 – 03.00pm Closing session of the workshop and tea

03.30 – 05.00pm City Tour Kandy

Post-Congress Workshop 2
10th November 2012
Faculty of Medicine, University of Ruhuna, Karapitiya, Galle

Pathophysiology of Osteoporosis and Fractures

Venue: Clinical Lecture Theater, Faculty of Medicine, Galle
Facilitators: Dr. Janaka Lenora, Dr. Sampath Gunawardena
Contact details: Dr. Janaka Lenora. Department of Physiology, Faculty of Medicine, University of Ruhuna, Galle
E mail rsjlenora@yahoo.co.uk Phone +94(0) 71 7612390

Programme

09.00-09.15am Registration
09.15-09.20am Opening Remarks by the Chairperson

Plenaries
09.20-09.30am Introduction
Dr. Janaka Lenora, Department of Physiology, Faculty of Medicine, University of Ruhuna, Galle
09.30-09.55am Hip fracture global perspective
Dr. Lalith Wijeratne, Consultant Rheumatologist, National Hospital, Colombo
09.55-10.20am Peak bone mass and fracture in old age
Dr. Mahinda Rodrigo, Department of Anatomy, Faculty of Medicine, University of Ruhuna, Galle
10.20-10.50am Tea
10.50-11.15am Genetics of Osteoporosis
Dr. Paul Gerdhem, Associate Professor in Orthopaedics, Karolinska University Hospital, Stockholm, Sweden
11.15-11.40am Role of Nutrition in Osteoporosis
Dr. Manjula Hettiarachchi, Nuclear Medicine Unit, Faculty of Medicine, University of Ruhuna, Galle
11.40-12.05pm Clinical applications of bone turnover markers
Dr. Janaka Lenora, Department of Physiology, Faculty of Medicine, University of Ruhuna, Galle
12.05-12.30pm Panel Discussion

12.30-01.30pm Lunch

01.30- 05.00pm City Tour (Galle Fort and Unawatuna Beach)

PLENARY LECTURES

Plenary Lecture 1

REFLEX EPILEPSIES AND THEIR PHYSIOLOGICAL BASIS

Professor Nimal Senanayake

Senior Professor and Chair of Medicine, Faculty of Medicine, University of Peradeniya, Sri Lanka

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One of the foremost problems in epileptology, of which least is known, is the reason why at a particular moment the seizure occurs. Certain nonspecific factors however, are known to precipitate seizures; these include fever, sleep deprivation, hyperventilation and drug or alcohol withdrawal.

Other less reproducible factors, such as emotions and the level of consciousness, may be related to an influence on the state of arousal. On the other hand, there are certain specific precipitants, namely, sensory stimuli such as light, sound and touch, which induce seizures in a minority of patients with epilepsy. This phenomenon is referred to 'reflex epilepsy'.

In the early part itself of my clinical practice in Peradeniya, I observed that the pattern of reflex epilepsy here was distinct from what had been reported in the West. Photosensitive epilepsy, which was by far the commonest form of reflex epilepsy in the West, seemed rare, whereas, some of the so called rare forms, such as self-induced epilepsy and those induced by higher cerebral functions, appeared relatively common. Following the cue given by several patients that their seizures occurred only when they ate a meal, I found that a large number of my patients had features of eating epilepsy, another form of reflex epilepsy considered rare in the West. These, in my view, represent a geographical variation in a disease pattern between the temperate countries and the tropics. The experience of fellow neurologists in the Indian subcontinent not only support my conviction, but suggest that there could also be local variations within tropical countries, as exemplified by the condition known as hot water epilepsy reported in the Deccan plateau of Karnataka State in South India.

My studies of the unusual forms of reflex epilepsy seen at Peradeniya form the basis of this presentation. By these investigations, I have been able, not only to define the clinical characteristics of these disorders, but also to identify a common thread which runs through the reflex epilepsies tying them together with regard to their pathophysiology.

Plenary lecture 2

ADVANCES IN GASTROINTESTINAL MOTILITY ASSESSMENT

Professor Uday C Ghoshal, MD, DNB, DM, FACG
Additional Professor, Department of Gastroenterology, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow 226014 (India)

Motility disorders are common in Gastroenterology practice. Advancement in diagnosis and better understanding of the pathophysiology of these diseases has been possible recently due to advancement in technology for assessment of gastrointestinal motility. Advancement made in the field of computers and software is another key development leading to improvement in these instruments. Oesophageal manometry is simple to perform. Recently, availability of commercial user-friendly software has made analysis of recorded data easy. High resolution spatio-temporal manometry is advancement over conventional manometry. Manometry is a useful tool for diagnosis, follow-up and research in oesophageal motility disorders. Recently innovated impedance manometry helps in studying the bolus movement during swallowing. Ambulatory 24-h pH-metry and impedance monitoring are also easily analyzed by commercially available software. 24-h impedance combined with pH-metry is currently considered as the gold standard for diagnosis of gastroesophageal reflux disease (GERD). Bravo capsule pH-metry is useful to study patients with GERD without using a catheter through nose. All patients with GERD may not require these investigations, but those with atypical symptoms, those refractory to medical treatment and requiring surgery do. Oesophageal transit study is useful in understanding functional correlates of abnormalities in manometry and is particularly useful during follow up studies and in research. Antroduodenal motility study is useful in assessment of patients with gastroparesis, intestinal pseudo-obstruction, systemic disorders affecting small intestine and for research on these disorders. Gut transit can be studied by radio-nuclide, lactulose hydrogen breath test and even during capsule endoscopy. Colonic motility can be studied using radio-opaque markers, colonic manometry and smartpill. Anorectal motility disorders are studied by conventional or high resolution manometry, balloon expulsion test and defecography. Pudendal nerve terminal motor latency is used to study pudendal nerve function. The above-mentioned tests are used to evaluate patients with gastrointestinal motility disorders.

Plenary Lecture 3

A REVIEW ON PULMONARY VAGAL AFFERENT RECEPTORS

Dr. Sampath Gunawardena
Dean and Senior Lecturer, Department of Physiology, Faculty of Medicine, University of Ruhuna, Sri Lanka
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Information from airways and lungs are carried to brain by vagal afferent fibres. There are four types of pulmonary vagal afferent receptors: (i) slowly adapting receptors (SAR) or pulmonary stretch receptors (ii) rapidly adapting receptors (RAR) or pulmonary irritant receptors (iii) pulmonary C fibre afferents and (iv) bronchial C fibre afferents. Electrophysiological studies on vagal afferent fibres have allowed physiologists to identify these receptors. Impulses originate in SAR and RAR are carried in myelinated vagal fibres while those originating in pulmonary and bronchial C fibre receptors are carried in non-myelinated vagal afferents.SAR are located in the smooth muscles of the walls of extra and intrapulmonary airways. They show an increase in activity as inspiration progresses and are involved in Hering-Breuer inflation reflex. RAR are located close to the epithelial cells of the airways as well as close to the bronchial venules. They respond to large distending and collapsing intramural pressures, irritant chemicals such as SO_2, ammonia vapour, cigarette smoke etc. They are also stimulated by an increase in extravascular fluid volume in airways as happened in pulmonary venous congestion or oedema. Because of their close proximity to the pulmonary circulation C fibre receptors have been known as J receptors (Juxtacapillary receptors). Pulmonary C fibres are readily accessible through the pulmonary circulation where as bronchial C fibres are accessible through bronchial circulation. They are sensitive to chemicals such as phenyl biguenide, capsaicin and 5 hydroxytryptamine. Stimulation of them by lactic acid leads to the pulmonary chemo-reflex.

Plenary Lecture 4

NUTRITION TRANSITION AND BODY COMPOSITION: THE ASIAN PARADOX

Dr. Angela de Silva BSc MBBS PhD
Department of Physiology, Faculty of Medicine, University of Colombo, Sri Lanka
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Type 2 diabetes (T2DM) and cardiovascular disease (CVD) are reaching almost epidemic proportions among south Asians. Studies comparing south Asians with white populations suggest that ethnic differences in predisposition to T2DM and CVD are related to differences in body composition. Paradoxically, despite a smaller body frame and stature, Asians have greater amounts of body fat and lesser lean body mass compared to Caucasians, both of which may influence susceptibility to chronic disease.

In addition to excessive body fat and obesity, the increasing disease burden from T2DM and CVD in Asia has also been attributed to a complex series of behavioural and dietary changes; the 'nutrition transition. Mechanisation and ease of transport, time and activity saving appliances, all conspire towards promoting physical inactivity. Another element of the nutrition transition is the change in diet. Traditional diets featuring a variety of grains and vegetables are giving way to meals high in fat and sugar; more food - but not necessarily of better nutritional quality or variety, are easily accessible. Studies on nutrition transition and body composition are important in understanding development of insulin resistance and CVD. Almost half a century previously, the 'thrifty gene' hypothesis fist tried to explain the modern prevalence of obesity and diabetes, but opponents of this theory point out flaws in this theory. Others suggest that genetic drift is a possible factor. Though evidence to date points in the direction of nutrients and physical activity influencing gene expression, many steps or processes possibly contribute towards the ultimate manifestation of the disease.

Plenary Lecture 5

IODINE DEFICIENCY AND SOUTH EAST ASIA

Professor Amar K Chandra
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The endocrine thyroid is highly sensitive to various environmental, natural and anthropogenic agents for its dependency on iodine, an integral constituent of thyroid hormones (T4 and T3). The earth has a non uniform distribution of iodine. Leaching of iodine from the soil in mountainous areas and washing of soil by flood waters plain flood-prone areas result in low iodine while coastal areas have high levels due to draining of the rivers in to the sea. Thus humans and animals that are totally dependent on food grown in such soil get non-uniform iodine. However iodine in optimum amount is required for the synthesis of thyroid hormone because T4 and T3 are necessary in all phases of the life cycle, including fetal and neonatal neurological development, overall growth, development, physical and mental functions, energy production and reproduction. The consequences of iodine deficiency are endemic goitre (enlargement of the size of thyroid gland), hypothyroidism, cretinism, reproductive failure, childhood mortality including socioeconomic retardation collectively called iodine deficiency disorders (IDDs). Historically the south Asian region is iodine deficient. Considering the consequences of IDDs, Universal Salt Iodization Programmes (USIP) has been introduced in most of the countries of the region. However, IDDs prevail in spite of USIP. A detailed review on the state of iodine nutritional status of most of the south Asian countries has been made revealing that in many of these countries, IDDs are still a public health problem due to the lack of monitoring systems, transportation problems, inadequate production and distribution, presence of dietary factors other than iodine deficiency and political instability. Exchange of ideas and experiences among scientists and professionals of the subcontinent may help to improve this public health problem.

Plenary Lecture 6

PHYSIOLOGY IN THE MOLECULAR ERA

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Elucidation of the double helical structure of the DNA molecule, identification of restriction enzymes, development of the polymerase chain reaction and many other technologies that followed, including high throughput technologies and genome sequencing has enabled scientists to examine the function of a single gene or many genes in an organism and to find out how derangements of genes, proteins and pathways lead to diseases. Issues for which conventional technologies failed to provide answers, such as identification of the "humoral satiety factor" were resolved with the aid of molecular biological techniques. Using such examples, the role played by molecular biology in enabling better understanding of Physiology will be discussed.

SYMPOSIA LECTURES

Symposium presentation 1

SINGLE FIBRE ELECTROMYOGRAPHY

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Single fibre electromyography (SFEMG) is a technique for recording a single muscle fibre action potential after stimulation of the motor nerve. The latency of the action potential varies by 20–50µsec, called jitter. Jitter shows the behaviour of a single neuromuscular junction (NMJ) and an increased jitter shows a reduction in the safety factor of neuromuscular transmission before transmission fails and before any clinical weakness is apparent.

SFEMG is used in the diagnosis of myasthenia gravis where it is very sensitive and the technique is useful in diagnosis of congenital myasthenic syndromes. Abnormalities are seen in Lambert Eaton myasthenic syndrome and botulism. There are also abnormalities seen when the motor nerve is under stress, in anterior horn cell disease and neuropathies. One motor nerve has to support 20 – 500 NMJs depending on the size of the motor unit. Some myopathies also show alterations in jitter.

We have used SFEMG to study the NMJ in organophosphorus poisoning, the intermediate syndrome, carbamate insecticide poisoning and after hump nosed viper envenoming. Hump nosed viper envenoming is not normally associated with paralysis, weakness or respiratory failure but SFEMG revels a degree of neuromuscular dysfunction. This confirms experimental findings of a neurotoxic component in hump nosed viper venom, probably a phospholipase type A.

Symposium presentation 2

USE OF EVENT-RELATED POTENTIALS IN THE STUDY OF SUB-CLINICAL COGNITIVE EFFECTS OF ORGANOPHOSPHATES

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Organophosphorus (OP) insecticide poisoning is a major health problem in South Asia. Neurocognitive impairment is an important, but not well-attended aspect of OP intoxication. Possible neurocognitive effects of organophosphates have been investigated by researchers over the last three decades using different approaches. More marked impairment was reported in studies that used subjective measures (e.g. symptom inquiries) whereas the results were inconsistent with objective measures of cognition (e.g. neuropsychological tests). In this context, researchers have highlighted the need for objective and sensitive tools to study possible cognitive effects of OPs. Event-related potentials (ERPs) are EEG potentials elicited by neuronal circuits that engage in cognitive processing, and ERP components can be systematically related to different cognitive processes. In the recent work that we conducted in Peradeniya in Sri Lanka, we used ERPs as an objective neurophysiological tool study potential cognitive effects of OP insecticides. The first study was conducted in patients clinically recovered from OP insecticide poisoning. The patients, although clinically recovered from acute phase of intoxication, showed impaired ERP and behavioural markers of cognition. Follow up assessment 6 months after poisoning showed no significant recovery of ERP markers, suggesting a long-term neurocognitive injury. The second study was conducted on farmers who spray OP insecticides. The results showed impaired ERP markers of cognition in these otherwise healthy individuals, indicating that even chronic occupational exposure to OP insecticides could lead to subclinical cognitive impairment. The full potential of ERPs as biomarkers of 'cognitive-toxicity' is yet to be explored.

Symposium presentation 3

EXECUTIVE FUNCTION TASKS: A PROMISING TOOL TO ASSESS BRAIN FUNCTIONS?

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The Pre-frontal cortical functions that are involved in higher order cognitive processes are collectively called executive functions (EFs). Two of the core processes of EF domain are the ability to inhibit prepotent responses and to suppress irrelevant information (inhibition)and the ability to retain relevant information temporarily as well as to use it while performing complex cognitive and behavioral tasks(working memory).

On the other hand the Pre-frontal cortex (PFC) has a more protracted maturation course relative to other neural systems in the brain. This has placed the PFC highly vulnerable to changes in the environment, making the PFC functions an ideal tool to assess the effect of environment on brain functions.

The deficiency of EFs has been consistently associated with various childhood behavioural problems and learning difficulties. Considering this, inhibition and working memory have been suggested as possible biological markers (endophenotypes) to detect risk groups as well as to identify the psychological mechanism/s in childhood behavioural problems.

Furthermore the assessment of EFs has many advantages such as ability to assess cognitive functions more objectively through computerized tasks unlike rating scales/questionnaires, ability to administer even in clinical settings and the similarity of tests to computer games. It is also relatively less time consuming. All these features have resulted in increasingly recognizing EF tasks as a potent and valid tool in assessing brain functions

Symposium presentation 4

PATHOPHYSIOLOGY OF CHOLESTATIC LIVER CELL INJURY

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Cholestatic liver cell disease/ injury is a descriptive term applied to liver cell injury occurring in the presence of bile flow impairment. Cholestasis may result from either a functional defect in bile formation at the level of the hepatocyte or from the impairment of bile secretion at the bile duct level. Bile formation under physiological conditions is mediated by a broad range of specific uptake and export systems localized to the basolateral and canalicular membranes of the hepatocytes and cholangioles. Mutations of such transporter genes are rare and such alterations are a consequence rather than a cause of cholestasis and largely represent an attempt to protect hepatocytes from intracellular toxic bile acids (BA). Swollen hydropic liver cells with a coarsely granular cytoplasm concentrated in the perinuclear region, termed feathery degeneration and necrosis of liver cells or bile infarcts are the key features of cholestatic hepatocyte injury. These are caused by the accumulation of toxic bile acids wwithin the hepatocyte resulting in cell injury and death through two mechanisms; lower BA concentrations induce hepatocellular apoptosis, whereas higher concentrations induce necrosis. Both types of cell death seem to play a role in cholestatic liver injury, although the contribution of each is controversial.Cholestasis of a longer duration lead to changes in the hepatocytes in Zone 1 which include more profound cystoskeletal abnormalities resulting in the formation of Mallory bodies. These are intracytoplasmic eosinophilic ropy inclusions due to collections of damaged intermediate cytokeratin fibres. These cytoskeletal alterations also include disruption of the microtubular system, disturbance to the actin microfilament network, alterations in tight junctions.

Fibrosis and associated ductular proliferation is the end result of long standing cholestasis. Several key transcriptional regulators orchestrate the transdifferentiation of the hepatocyte stellate cell (HSC) from a quiescent to an activated myofibroblastic-like phenotype producing extracellular matrix in the liver. Factors increasing as a results cholestasis might also be pro-fibrogenic themselves. In this respect it has been shown that BA binds to the epidermal growth factor receptor on HSC leading to cellular proliferation. There also appears to be extensive paracrine cross-talk between cholangiocytes and portal fibroblasts in cholestatic liver disease. The large number of proliferating small bile ducts referred to as the 'ductular reaction' on histology, are characterized by increased expression of anti-apoptotic genes, neuroendocrine, adhesion and co-stimulatory molecules, cytokines, chemokines, growth factors , and profibrogenic stimuli which have autocrine and paracrine effects on myofibroblast activation, migration and proliferation. Ursodeoxycholic acid (UDCA) is a hydrophilic BA useful for the treatment of cholestatic liver diseases by its ability to modulate hydrophobic-BA-induced injury in hepatocytes. Their beneficial effects include protection against cytotoxicity due to more toxic BAs, stimulation of bile secretion, immunomodulation, and protection against oxidative stress and the inhibition of apoptosis.

Symposium presentation 5

CHOLESTATIC LIVER INJURY AND LIVER BRAIN INFLAMMATORY AXIS

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Chronic liver diseases, particularly cholestatic liver diseases are frequently associated with debilitating symptoms such as fatigue, malaise, loss of interest in social activities and lethargy. These are collectively known as 'sickness behaviour'. Patients with cholestatic liver disease often describe these symptoms as having the greatest detrimental impact on the quality of their lives. Although it is widely accepted that changes in the central nervous system that occur in the setting of peripheral liver inflammation can lead to changes in behaviour, the exact mechanism of how the periphery communicates with the brain is poorly understood. The 'liver- brain inflammatory axis' describes current information on the changes in the central neural activity and communication pathways between the liver and the brain.

Both neural and humoral pathways have been described, with the three cytokines TNF α, IL-1β and IL-6 receiving most attention as mediators. The liver is innervated by vagal afferents that respond to these immune mediators. The neural pathways that project to different areas of the brain are activated by these cytokines that are produced at the site of liver injury. The humoral route involves the cytokines that diffuse into the brain in the areas that lack the blood brain barrier or cytokines communicating with the brain by activating the endothelium and transmitting signals to brain parenchyma. A key component in this signaling process is the activation of microglia. Microglial activation promotes monocyte migration into the brain which further enhances the immune response. Subsequently there is release of neurosteroids and prostaglandins that activate signaling pathways in the cerebral neurons that induce sickness behaviour.

Current evidence from multiple studies concludes that liver inflammation hurts the brain and justifies the evaluation of new immunomodulatory therapies in chronic liver diseases.

Symposium presentation 6

MANAGEMENT OF EXTRAHEPATIC BILIARY OBSTRUCTION- RISK/ BENEFITS OF DERANGED PHYSIOLOGY FROM MINIMAL ACCESS APPROACH

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Obstructed infected extra hepatic biliary tree is a challenging clinical problem. The end result -Toxic cholangitis, if untreated carries a mortality of 100%. Minimal access Endoscopic Surgery has revolutionized the management of structural and functional obstructions of the bile duct. What is most intriguing is the recently recognized functional type of obstruction referred to as Sphincter of Oddi Dysfunction (SOD).

Sphincter of Oddi is an intricate maze of smooth muscle regulated by many neuro-transmitters and hormones. Normal basal pressure gradient is between 3 -35 mm of Hg. Pressures above 40 mm Hg is regarded abnormal. Classical clinical profile of SOD is a young woman presenting with recurrent episodes of biliary or pancreatic type pain. Condition is a clinical challenge because of the difficulties in diagnosis and the controversy regarding the therapeutic options. However, with the rapid advent of biliary endotherapy more than 90%of bile duct stones can be effectively treated with minimally invasive techniques.

Is it safe to divide such a structurally innate sphincter? What are the short and long term risks? Post ERCP Pancreatitis occurs at a frequency of 2-8%. Obvious long term concern is Cholagio carcinoma. Of many studies, a population study based on Danish health care register in 2008 addressed this issue by examining the incidence of cholangiocarcinoma after endoscopic sphincterotomy in more than 10,000 and a similar number who did not undergo sphincterotomy. Cholangiocarcinoma incidence rate for sphincterotomised patients was 404 per 100,000 person-years during the first year after ERC and the corresponding rate for patients without sphincterotomy were 458 per 100,000 person-years. This study suggests a lack of causal association between sphincterotomy and cholangiocarcinoma.

Since Mitterrand Classen performed the first Endoscopic Sphincterotomy in 1974, millions have been performed worldwide. This operation has revolutionized the management approach to complicated biliary and pancreatic Diseases.

Symposium presentation 7

THE BRAIN GUT AXIS

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The brain-gut axis represents the complex, bi-directional communication between the central nervous system and gastrointestinal tract. Bowel functions are modulated by the central nervous system via efferent and afferent neural pathways (mainly autonomic nervous system) and different humoral mechanisms. The brain-gut axis can influence gut functions including sensitivity, motility, secretion and immunology. Psychological factors, such as emotional stress, anxiety and depression, can impair gut functions and increase gut sensitivity, via this axis.

Knowledge of how the brain processes sensory information from the gastrointestinal system is still in its infancy. However, recent advances in imaging techniques such as functional magnetic resonance imaging, positron emission tomography and magnetoencephalography have demonstrated the complexity involved in functional pain processing, and highlighted a number of subcortical and cortical regions involved.

The disturbances in the brain-gut axis can generate multiple gastrointestinal disorders that can be of primary aetiology or exacerbations of other primary conditions. Functional gastrointestinal disorders (such as irritable bowel syndrome, functional dyspepsia and constipation) and motility disorders (such as gastroparesis and gastroesophageal reflux disease) are among them.

Neuromodulation can be done using pharmacological agents which target the receptors in the brain gut axis. In addition, electrical stimulation, applied at different levels of the nervous system or directly in the muscular layers of the bowel, can be used to modulate the digestive system activity. Neuromodulatory interventions targeting brain-gut axis are currently used as treatments for some gastrointestinal disorders related to disturbances in this axis and many more are under investigation and will be available in the future.

Symposium presentation 8

INSIGHT INTO MECHANISMS UNDERLYING THE RELATIONSHIP BETWEEN THE OESOPHAGUS AND THE AIRWAYS

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The oesophagus and airways have a common embryological origin. It is possible that inflammation in either leads to reflexes that manifest clinically as Gastro-Oesophageal Reflux Disease (GORD) or respiratory disease. Gastro-oesophageal reflux, the involuntary movement of gastric contents to the oesophagus becomes pathological (GORD) when the effects of this physiological phenomenon exceed the protective mechanisms of the oesophageal mucosa. There is evidence for a causal relationship between respiratory diseases such as asthma, chronic obstructive pulmonary disease, bronchiectasis and GORD.

The pathway for triggering respiratory symptoms or disease involves vagal sensory nerves innervating the airways, lungs and oesophagus. The proposed mechanisms are micro-aspiration of acid into the airways or an acid induced-oesophago-bronchial reflex. Acid-induced direct alterations in ventilation, neurogenic inflammation, autonomic dysfunction and hypervagal response have also been implicated. An increased pressure gradient between the thorax and abdominal cavity, alterations in crural diaphragmatic function, and effects of medication to treat respiratory disease could contribute to GORD.

This presentation provides an insight to the current understanding of the relationship between GORD and respiratory disease. It presents findings of a study that describes the prevalence of GORD symptoms, upper gastrointestinal motility abnormalities and possible mechanisms of GORD-induced asthma in a group of adults with mild, clinically stable asthma in Sri Lanka.

Symposium presentation 9

BOWEL FERMENTATION

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The balance between caloric intake and energy expenditure determines the body weight. Sedentary lifestyles have reduced energy expenditure while easily accessible energy dense foods have increased the caloric intake. These obesogenic factors have fostered the development of obesity. Enhancing satiety, the condition of being full, by the use of fermentable food is one strategy of overcoming obesity. A large number of gut microorganisms live in the colon. Non starch polysaccharide, resistant starch and oligosaccharides, are the main substrates for hydrolysis by bacteria anaerobically. This process produces short chain fatty acids (SCFA) (acetic, propionic and butyric acid), the gases (H_2, CO_2, ammonia,) amines, and phenols. Animal experiments showed that bowel fermentation releasing PYY and enteroglucagon may influence digestive functions and satiety. Dietary fibre increases transcription of the proglucagon gene, modulates intestinal proglucagon messenger ribonucleic acid and postprandial secretion of glucagon-like peptide-1. L cells in the rat intestine can be controlled by fermentable carbohydrates and similar responses were seen in humans as well. Fermentability of dietary fibre produces specific effects on satiety by releasing gut peptides such as GLP1. Among healthy adults, a higher satiety level was shown when the enteral formula was supplemented with pea-fibre and fructo-oligosaccharide as compared to giving only the standard formula. The potential link between the release of anorexigenic peptides PYY, GLP1 and the production of SCFA by bowel fermentation has been investigated. It has reported that SCFA are identified as ligands for protein coupled receptor FFAR3 (GPR41) and FFAR2 (GPR43). FFAR3 is co localized in L cells and a high level of FFAR2 expression was found in adipose tissue. It has been suggested that acetate and propionate may have a role in adipogenesis through FFAR2. These findings provide a rationale that SCFA may induce satiety and influence energy homeostasis. However the mechanism of SCFA leading to satiety has been contradicted in intervention studies in humans. Oral SCFA supplementation in humans has attributed palatability and did not support a role of SCFA on appetite. Stimulation of gut hormones and food intake inhibition by butyrate and propionate in FFAR3-deficient mice has been identified suggesting additional mediators for these effects. Identify receptors and the signaling pathways in the L cell which can be potential targets in controlling caloric intake are challenging tasks in the near future.

Symposium presentation 10

CARDIAC BIOMARKERS

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The signs and symptoms of heart diseases appear to be similar, yet the diagnosis and treatment differ. The blood cardiac biomarkers [CBMs] of inflammatory, acute muscle injury and cardiac stress are sought to bridge the gaps in prognosis, diagnosis and treatment of heart diseases. The list of CBMs is long but a few have passed the acid tests of clinical trials. Cardiac troponin [cTn] for myocardial necrosis followed by heart failure markers BNP and NT-pro-BNP have received much clinical attention. This review lecture will deal with following gaps in the CBM research:

1. Diagnostic challenges from a single organ to multiorgan failure.
2. Search for inflammatory CBMs in absence of myocardial necrosis.
3. Interpretation difficulties of CBMs in ICU.
4. Non-linear dynamics and cut-off levels of CBMs.
5. Transition from a normal to hs-CBM.
6. Reliable CBM data on critically ill patients.
7. Role of CBMs in biominerals and blood pressure control.
8. Role of CBMs in pulmonary embolism, sepsis and renal failure.
9. Micro RNAs as potential CBMs.
10. CBMs emerging from molecular genetics pathways of the coronary arterial tree.

Dedicated to the centennial celebration of HH Loeschcke [1912-1986] from Ruhr University Bochum.

Symposium presentation 11

AUTONOMIC FUNCTION TESTING IN CARDIOVASCULAR PHYSIOLOGY

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The prime concern of the cardiovascular system is tissue perfusion. Thus, blood pressure, heart rate, and other cardiovascular functions are regulated by the autonomic nervous system in order to meet the demand of the body under different conditions, e.g. resting, work, exercise, postural changes, cold etc.

For more than three decades, changes in heart rate and blood pressure in response to deep beating (DB), Valsalva maneuver (VM), cold pressor, handgrip and postural challenges are recorded for the assessment of autonomic function in cardiovascular physiology. The DB and VM are sensitive to assess parasympathetic responses, whereas the other three tests are fairly sensitive to assess sympathetic responses. These tests are non-invasive, easy to conduct and sensitive enough to detect impairment in autonomic nervous system. Thus, these tests are well accepted for testing autonomic functions.

Technological advancement has enabled detailed dynamic recording of EKG, continuous BP tracings, neural activity and development of non-invasive rhythm analysis tools as heart rate variability (HRV), Blood pressure variability, and baroreflex sensitivity (BRS) has further promoted research and clinical interest in cardiovascular autonomic regulation.

All these tests provide important information on the autonomic status in health and diseases. In diseases such as in myocardial infarction (MI), cardiac failure, diabetes mellitus, obesity etc., HRV is reduced. Reduced HRV is one of the independent predictors of sudden cardiac death. Several investigations are going on to detect the degree of autonomic loss in different diseases for their management. Thus, autonomic function testing is a useful investigation both for basic and applied research having clinical implication.

Symposium presentation 12

WHAT IS NORMAL BLOOD PRESSURE? AN UPDATE

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The continuous relationship between blood pressure and cardiovascular risk makes division into normotension and hypertension arbitrary and artificial. While a graded rise of systolic blood pressure proportionately increases the risk, the relationship of diastolic blood pressure to risk is less straightforward and further complicated by the "J curve" phenomenon. Observational studies place systolic and diastolic blood pressure as low as 115 mmHg and 75 mmHg respectively as the starting points of risk. The diminishing blood pressure threshold of cardiovascular risk has given rise to a controversial newer category of blood pressure; prehypertension, levels that were higher than normal but did not reach the level of hypertension that increases the risk for progression to hypertension and to cardiovascular disease. Several factors determine the "normality" of blood pressure. Blood pressure is noted for its intense variability; a morning rise with a nocturnal fall with physical and mental activity been major determinants of the considerable daytime variation. The numeral cut-off values are flexible based on the time of the day and the types of measurement (office, home or ambulatory) and linked to risk and organ damage. A raised blood pressure can be a physiologic response, a risk for cardiovascular disease or a disease state. The clinical situation determines the response by the physician if this finding can be safely ignored, require careful follow-up and confirmation or if needed prompt treatment. While blood pressure is measured peripherally for convenience, it is the level of central arterial blood pressure that determines target organ damage. The advent of newer non-invasive devices is changing the way this is derived and used for clinical decision-making. The phenomena of white coat hypertension, masked hypertension and reverse masked hypertension have further dented the singular role of office – setting for as the standard measurement of blood pressure. The different blood pressure targets set for diverse disease conditions are an indication of the dissimilar impact of blood pressure on different parts of the vascular tree. The early detection of the effects of blood pressure on the vascular structures and organs in the future may help refine our definition of hypertension currently set at 140/90 mmHg and clarify normal blood pressure. Until then the operational definition of defining hypertension in terms of a blood pressure level above which treatment does more good than harm will hold.

Symposium presentation 13

UPDATE ON PULMONARY PHYSIOLOGY AND PATHOHPHYSIOLOGY

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The primary function of respiratory system is to obtain O_2 from atmospheric air and to eliminate CO_2, the cells produce constantly during energy generating chemical reactions. The respiratory system is made up of gas exchange organ (lung), a "pump" (chest cage) that ventilates the lungs and part of brain that controls respiratory muscles.

The four major processes of respiration include, pulmonary ventilation, diffusion of oxygen and carbon dioxide between alveoli and pulmonary blood, transport of a O_2 and CO_2 in the blood and body fluids to and from the body tissues and regulation of ventilation and other facets of respiration. About 250ml of CO_2 enters the body per minute and 200ml of CO_2 is excreted. Traces of other gasses, as methane from intestine is also formed in expired air. Alcohol and acetone are also expired when present in high quantities.

Respiratory symptoms are the most common cause of presentation to a family practitioner. Asthma occurs in more than 10% of British adults, and bronchial carcinoma is the most common fatal malignancy in developed world. Lung is the major site of opportunistic infection in immunocompromised patient and tuberculosis continues to increase, infecting one third of the world population. Diagnosis and treatment of most respiratory disorders depend mainly on understanding the basic physiology principles of respiration and gaseous exchange. Respiratory disorders range from inadequate ventilation to abnormal diffusion through respiratory membrane or abnormal transport of CO_2 between lungs and tissues.

Respiratory function tests are used to assess functional impairment, aid diagnosis and monitor treatment or progress of disease. Airway narrowing, lung volumes and gas exchange capacities are measured and compared with normal values. Spirometry, forced spirometry, peak flow metry, arterial alveolar PO_2 difference, diffusion capacity of lungs are commonly used respiratory function tests along with chest radiography and laboratory investigations like ESR, CRP, IgE and eosinophil count.

Symposium presentation 14

SPIROMETRY AT THE CENTRAL CHEST CLINIC COLOMBO; CLINICAL CORRELATES

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The Central Chest clinic Colombo is the main public tertiary respiratory care center catering to hundreds of patients with respiratory diseases, in the city of Colombo.

Spirometry is a valuable tool for the diagnosis and management of many respiratory diseases. It is unfortunately a scarce resource, and not available to many physicians dealing with these diseases, mainly due to financial constraints.

A cross-sectional study was conducted on data (n = 1000) obtained from patients referred for spirometry over a period of one year to the spirometry laboratory at the Central Chest Clinic. Lung function parameters consisting of the FVC, FEV1 and the FEV1/FVC ratio were analysed.

The data reveals the burden of Obstructive and Restrictive lung disease presenting to our Lung Function Laboratory. The study highlights the importance of spirometry in clinical practice, aiding the clinician in the diagnosis and management of respiratory disease.

Symposium presentation 15

SCREENING FOR OCCUPATIONAL RESPIRATORY DISEASE – ROLE OF SOUTH ASIAN PHYSIOLOGISTS

Professor Savithri Wimalasekera
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Occupational respiratory diseases are work-related diseases caused when the air in the work environment is polluted with an excessive amount of dust, fumes, smoke, gases, vapors or mists. Poor ventilation, closed-in working areas and heat increase the risk of disease. The commonest agents that can cause respiratory disease are dusts, fumes, smoke, gases vapors and mists. The sizes of the inhaled particles determine the hazardous site in the respiratory tract. Individual factors in the workers such as past episodes of respiratory disease, childhood asthma, and smoking status all contribute towards a greater predisposition to occupational respiratory disease. When determining respiratory disease due to occupational exposure, several factors need to be considered. They are when the symptoms first appeared, the frequency of symptoms, the time of day of the features, the days of the week when the symptoms are worse, and the potential disease causing material.

Occupational asthma (OA) is the commonest lower respiratory disorder in most populations. Its prevalence is closely followed by Chronic Obstructive Airway Disease (COAD). OA and COAD both give a picture of obstructive disease pattern on spirometry analysis. Restrictive airway disease and malignancy too are often observed in many occupations. These contribute to impaired respiratory function tests. The criteria to diagnose obstructive and restrictive respiratory disease are commonly used in occupational settings. The reduction in Forced expiratory Volume (FEV_1) to less than 70% of the predicted for an individual is an early sign of respiratory dysfunction. Assessment of early dysfunction of the smaller airways can be determined by measurement of flow volume loops, Forced Expiratory Flow (FEF 25%-75%) and Maximal Voluntary Ventilation (MVV).

Some occupations unique to the region that have been studied are rice milling industry, coconut fiber processing industry, garment manufacturing industry, tropical horticulture industry, coal power generating industry, gem cutting and road construction industry. The workers of these occupations have all shown signs of respiratory dysfunction.

It is essential that clinical respiratory physiologists are able to objectively assess lung functions, provide preventive advice before the onset of disease and adopt remedial measures during work to minimize exposure. All workers should be screened for respiratory function before employment and should be monitored throughout employment. The potential occupations should be given appropriate advice on the use of a respirator (a device worn over the mouth and nose that cleans the air before it enters the lungs body) or mask. If these protective mechanisms can be implemented, the incidence of occupational respiratory disease could be greatly reduced in the South Asian region.

Symposium presentation 16

EDUCATIONAL SCHOLARSHIP

Professor Robert Carroll
Professor of Physiology, University of East Carolina, USA

As trained observers and researchers, physiologists are well suited to assess and evaluate the impact of their efforts in the classroom. In drawing on an analogy, the steps of educational scholarship parallel the CNS control of voluntary movement. When asked to pick up a pencil, the first area of the brain activated is the sensory cortex, (establishing where the pencil and hand are now), followed by motor associative areas (planning the activity) primary motor cortex (executing the movement) and continual adjustment of motor output based on visual, proprioception and tactile sensory information (assessing the outcome). Similarly, educational scholarship begins with the determination of the current state, planning for a desired outcome, implementing the change, assessing the outcomes and refining based on the data. Communication of these results in a peer reviewed forum is the final step in the process, and defines the movement from an educational activity to educational scholarship. Venues for dissemination of educational scholarship include journals such as *Advances in Physiology Education* and regional workshops such as the "Linking Teaching and Learning" workshop held yesterday. Sharing the results of innovative and effective teaching activities improves both your own teaching and that of the discipline.

Symposium presentation 17

INTEGRATED PRACTICAL EXAMINATION [IPE] IN BASIC HEALTH SCIENCES [BHS]

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Aims and Objectives: The recent trends in medical education have driven the curricula towards horizontal and vertical integration across various disciplines. The integration of assessment of practicals is, thus, essential for the successful implementation of integrated curriculum.

Methods and Materials: We used IPE as a tool to assess basic sciences laboratory skills integrated with clinical skills for the preclinical years. IPE is conducted in a modified Objective Structured Practical Examination [OSPE] format. Each station comprises of tasks related to performance and communication skills asked in clinical context. Validity is ensured by developing a blue print and an extensive review. Competencies related to Performance Skills, Communication Skills, Reasoning Skills, and Humanistic Qualities/ Professionalism are incorporated by developing an IPE construction template.

Simulated patients are incorporated into IPE, which consist of a series of timed "stations", each one focused on different tasks. The observing faculty member uses a checklist of specific behaviors or a global rating form to evaluate the student's performance. A minimum of 12 to 15 stations, which the student usually visits over the course of 3 to 4 hours, is necessary to achieve a reliability of the assessment.

Results and Conclusions: Case Scenario, Video, Images/ Photograph/ Model/ Specimen or Standardized Patients were used as triggers at each station. Usually, 3-4 tasks relevant to the trigger were given. These stations included tasks which were both interactive and static, observed and rated by trained faculty members. The IPE has enhanced the integration of practical aspects of the disciplines of BHS and their relevance to clinical applications. Besides, it has provided a platform to judge a large spectrum of knowledge, skills and attitudes in health sciences.

Acknowledgement: We acknowledge the Modular Teams to successfully implement IPE system.

Symposium presentation 18

Outreach Models to Promote Physiology

Professor Barbara E. Goodman
Professor of Physiology, University of South Dakota, USA

This presentation will describe various models to promote physiology to K-12 teachers and their students and to the general public. The American Physiological Society and the Sanford School of Medicine of the University of South Dakota have been involved in a number of programs to enhance outreach both nationally and locally including local outreach teams, the Frontiers in Physiology program, Physiology Understanding (PhUn) week, physiology awards for students projects at science fairs, scientists-in-residence in nearby schools, summer research teacher relationships with physiology researchers, etc. In addition, the APS Communications Committee has bloggers, tweeters, and a pending website (physiologyinfo.org) to feature their podcasts and others that highlight physiology.

Symposium presentation 19

ALPHA-TOCOPHEROL (VITAMIN E) IN SERUM- USES AND ASSESSMENT

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Background: Vitamin E (alpha-tocopherol) is a fat soluble antioxidant that inhibits the production of reactive oxygen species formed when fat undergoes oxidation. Vitamin E is linked to diseases like cancer, atherosclerosis, hypertension, male infertility. Due to its clinical importance, evaluation of serum vitamin E level is necessary; hence several methods have been developed for this purpose. Drawbacks and difficulties observed among the present available methods include the need for costly chemicals, kits and instruments like high performance liquid chromatography (HPLC), lengthy and time consuming methodology (for ELISA kit method and paper or thin layer chromatography (TLC)), the need for a large quantity of serum (a hindrance for estimating rat or mice serum vitamin E), lower sensitivity and accuracy or needs of correction factor calculations.

Aims and Objectives: To develop a new micro method that enables easy, economic, rapid methods utilizing small quantity of sera to determine serum α-tocopherol (Vitamin E) concentration in our laboratory.

Materials and Methods: In this modified method we used 2,2'-Bipyridyl, Ferric chloride, Xylene and ELISA reader with plain ELISA micro plate (non antibody coated) at 492 nm.

Results: The standard curve of this new modified method shows linearity with correlation r = 0.997 (concentration vs absorbance). The absorbance of this color complex is directly proportional to α-tocopherol concentration. The sensitivity of this new modified method has been compared and correlated with Baker and Frank (1968) method by using 15 human serum samples ($r = 0.99$, $p < 0.0001$).

Conclusions: We recommend this simple method to evaluate serum alpha-tocopherol to the scientific community especially those from developing countries.

Symposium presentation 20

Diet and Cancer: An Overview

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Aims & Objectives: Various dietary factors have been shown to influence overall cancer risk and tumor behavior. The aim of this paper is to highlight the current state of knowledge in understanding of the interactions among different food constituents and cancer. The objective is also to assess the epidemiological evidences of diet and cancer and to formulate the public health recommendations regarding diet, cancer and its prevention.

Methods & Materials: The paper has been designed on the basis of reviews of published case control studies, large prospective studies and epidemiological evidences.

Results & Conclusions: Roles of diet in the etiology of some major cancers have been briefly discussed. Some dietary factors increasing and reducing the risk of cancers have also been discussed. Overweight/ obesity increase the risk of cancers of oesophagus, colo-rectum, breast, endometrium and kidney. Consumption of alcohol causes cancers of the oral cavity, pharynx, oesophagus and liver. Food contaminated with aflatoxin increases the risk of liver cancer. High intakes of preserved meat or red-meat have been shown to increase risk of colorectal cancer. High intake of salt preserved foods and of salt increases risk of stomach cancer. Activity of non-starch polysaccharides and non-digestible carbohydrates in colon cancer protection has been suggested. Several epidemiological studies suggest that a daily intake of fruits and vegetables can reduce the incidence of various types of cancers. Calorie restriction suppresses carcinogenesis process.

Some recommendations have been suggested for framing, implementing the public health policy in respect of diet, cancer and its prevention.

Symposium presentation 21

ADIPOSE TISSUE AS AN ENDOCRINE ORGAN

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The sole function of adipose tissue was traditionally considered to be the storage of excess energy in the form of lipids. However, with the discovery that it secretes numerous bioactive peptides collectively known as adipokines, it is now considered to be an endocrine organ. These adipokines have important physiological functions in blood glucose homeostasis and regulation of blood pressure and energy balance. In addition to fat cells (adipocytes), adipose tissue also contains immune cells such as macrophages and lymphocytes. Obesity and excessive adiposity leads to a chronic low-grade inflammation in the adipose tissue, leading to dysregulation of adipokine secretory patterns, which is causally linked to the pathogenesis of metabolic syndrome and Type-2 diabetes. Dietary interventions are successful in both alleviating adipose tissue inflammation as well as improving systemic insulin resistance. Identification of mechanisms responsible for the onset of obesity-induced adipose tissue dysfunction would lead to discovery of molecular targets which would be useful in preventing and treating these metabolic disorders.

Symposium presentation 22

BENEFITS AND PROBLEMS OF EXERCISE

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Development of technology has made muscles and bones redundant. Association between lack of exercise and non-communicable diseases led to studies on exercise. Benefits of exercise include: increased strength and vascularity of skeletal muscles, increased strength of bones, tendons and ligaments, thicker articular cartilage, increased growth at epiphyseal plate, reduced risk of heart diseases, reduced coagulability of blood, improved blood glucose control, improved lipid profile (less LDL and more HDL), improved Immunity and wound healing and reduced adipose tissue. Benefits to higher functions include improved problem solving ability, feeling of wellbeing, good sleep, reduced anxiety and depression and reduced sexual activity among adolescents. Exercise plays an important role in rehabilitation after many disorders. The negative aspects of exercise include injuries –overuse, accidental or foul play. Whether the stresses of competitive sports outweigh the benefits of exercise is worth considering. Effects of exercise in illnesses like viral infections, liver diseases and kidney diseases seem not to have been studied adequately. Majority of the world population is undernourished and still depends on manual work to earn their living. The effect of excessive energy expenditure of exercise on their body composition and health is likely to have adverse consequences. Whether females get all the benefits from exercise as males remains a question, and the problems of exercise during menstruation and pregnancy need consideration. Exercise induced asthma is known. The problem of increased dust due to hyper ventilation of exercise in dusty environment could be another risk of respiratory infection.

Symposium presentation 23

MAXIMAL OXYGEN CONSUMPTION (VO_2MAX) – AN IMPORTANT MEASURE OF AEROBIC CAPACITY

Dr. Shamila Rajaratna
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Aerobic capacity is a reflection of how well the heart and lungs work together to supply oxygen to the body during exertion and exercise and the maximum amount of O_2 capable of being transported to and consumed by the working muscles is considered the benchmark measurement for endurance athletes. The amount of O_2 the body actually uses (at rest, at submaximal or maximal physical activity) is determined by the heart rate, stroke volume and the arterial-venous O_2 difference (a-vO_2 diff); the FICK equation. This equation indicates that the linear relationship between HR and oxygen uptake depends on a steady increase in stroke volume and a-vO_2diff.The a-vO_2diff reflects the ability of muscle to extract oxygen, whereas cardiac output depends on cardio-respiratory function.

Because the actual measurement of SV and a-vO_2 difference is impractical in the fitness setting, VO_2 is determined through gas analysis; analyzing the air a person inhales and exhales while exercising to a level of exhaustion. However, this procedure is expensive and time consuming, and requires highly motivated subjects, making it impractical for the average person.

Because of ease, cost effectiveness and safety, sub-maximal testing is widely used to estimate VO_2max. The most widely used procedure for predicting maximal oxygen consumption is the Astrand-Rhyming nomogram. Use of the nomogram in submaximal field tests is based on measuring the heart rate response to a quantifiable form of work such as cycle ergometry, treadmill walking, running and stepping. The VO_2max is then predicted from the measured heart rate responses.

Symposium presentation 24

SUCCESS IN SPORTS; ACHIEVING THROUGH AN EVIDENCE BASED APPROACH

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Interest in sports has increased greatly over the last decades. Although many of us engage in sports with various objectives such as improving physical fitness and as a form of entertainment, sport success goes hand in hand with competitive sports.

Successful sports performance requires a correct blend of many factors. Selection of sports personnel should be based on anthropometry, fitness, skill and if possible, the genotype profile. Once an athlete is selected for a particular sport, his/her journey towards success should be planned carefully. Focused training, nutrition/diet and psychology are three inter-related areas which warrant emphasis. The attention of sports and exercise scientists should direct towards strengthening these three pillars which support success. They should think beyond the conventional regimens and make use of scientific evidence in introducing innovative strategies/protocols to optimize these areas.

In addition, environmental factors, sponsorship and funding, medical help to prevent and treat sports injuries, factors such as jet lag and adjustment to different climates are some other areas worth giving some though when the total package for success is considered.

Symposium presentation 25

MONOGENIC DIABETES: A MOLECULAR INSIGHT IN TO THE AETIOLOGY OF DIABETES MELLITUS

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Diabetes mellitus is a multifactorial disease with both environmental and genetic factors being implicated in its aetiology. Around 1-2% of individuals with diabetes mellitus have a single gene cause for their condition. Such cases usually have a younger age of onset, a variable phenotype with regard to requiring insulin therapy and long term micro and macro-vascular complications and often, a positive family history.

Mutations of genes involved in monogenic diabetes result in disordered insulin secretion; the genetic basis of insulin resistance is not well understood.

Insulin is a peptide hormone secreted as a preprohormone and the INS gene on chromosome 11 codes for this. Following processing in the Golgi, it is stored in granules within pancreatic islet cells. A rise in plasma glucose results in increased glucose transport via GLUT2 into the islet cells. This glucose is rapidly phosphorylated to glucose 6 phosphate and this reaction is catalysed by the enzyme glucokinase. Glucose 6 phosphate undergoes glycolysis and the resultant rise in ATP causes closure of an ATP sensitive K^+ channel causing the depolarisation of the cell and opening of voltage gated Ca^{2+} channels. The resultant entry of Ca^{2+} stimulates release of preformed insulin from the islet cells.

The molecular basis of monogenic diabetes include mutations of the insulin gene, the genes coding for the subunits of the inwardly rectifying potassium channels of the islet cells (KCNJ11 and ABCC8), transcription factor genes (e.g. HNF1A, HNF4A), glucokinase, imprinted genes on chromosome 6q24 and mitochondrial genes.

The molecular mechanisms involved and their clinical significance will be discussed.

Symposium presentation 26

INSULIN RESISTANCE IN ADULTS AND THERAPEUTIC INTERVENTIONS

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Insulin is the most important hormone in glucose homeostasis and also plays pivotal roles in lipid and protein metabolism. Insulin resistance is a state where there is impairment of action of insulin hormone at cellular levels. Insulin resistance leads to reduced uptake of glucose in the liver, muscle and adipose tissue. In addition, this results in increased hepatic glucose output. Both these phenomena lead to hyperglycaemia. In the initial stages the beta cells of the pancreas compensate by secreting more insulin. However in people, who have genetic predisposition for beta cell failure, this compensation does not last long and the beta cell failure leads to hyperglycaemia and type 2 diabetes. It is also postulatedthat hyperglycaemia results in a toxic status to the beta cells (glucotoxicity). The impairment of intake of fatty acids to fat cells and increased fat breakdown results in higher levels of free fatty acids (FFAs) in the circulation with other deleterious effects. Similar to the glucotoxicity it is postulated that the FFAs leads to a state of lipotoxicity to the beta cells both setting up of a vicious cycle of beta cell failure. There are rare monogenic forms of insulin resistance such as mutations in the LMNA gene (Familial Partial Lipodystrophy) and insulin receptor gene. However, mostforms of adult insulin resistance are thought to be polygenic and multifactorial. Certain ethnic groups such as Asian Indians have been shown to have higher levels of insulin resistance. In addition, increased visceral obesity, sedentariness and increased age have been shown to be other risk factors of insulin resistance. Insulin resistance is also seen in the polycystic ovarian syndrome. Drugs such as steroids, acute infections, trauma and surgery are other causes of acute and reversible insulin resistance. Insulin resistance, hypertension, hypertriglyceridaemia, low HDL cholesterol and hyperglycaemiahas been shown to cluster together more often than by simple chance and this phenomenon is widely called the metabolic syndrome. Non-alcoholic fatty liver disease and fat inflammation are also increasingly recognized in insulin resistant individuals. Hyperinsulinemiceuglycemic clamp is considered the gold standard method of measuring insulin resistance and the modified insulin suppression test is another method. The Homeostatic Model Assessment (HOMA) and the Quantitative insulin sensitivity check index (QUICKI) are two more simpler and less invasive methods that use fasting glucose and insulin to calculate the insulin resistance.

Dietary interventions and increased physical exercise to reduce the level of fat has been shown to improve the insulin resistance. The two drugs, metformin and the thizolidinedionealso act by reducing the insulin resistance. Bariatric surgery is also shown reduce insulin resistance dramatically in morbidly obese individuals reversing manyeffects of insulin resistance.

Symposium presentation 27

INSULIN RESISTANCE IN CHILDHOOD

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Increase in childhood obesity has lead to increase in insulin resistance invariably leading to an increase in cardiovascular mortality later in life. Insulin resistance leads to the development of many adult onset diseases such as diabetes, hypertension, cardiovascular disease and hyperlipidaemia. Collection of these abnormalities was designated as "metabolic syndrome". South Asian populations are known to have high fat content in their body leading to insulin resistance related illnesses. A British study of 8-12 year old children demonstrated that those of south Asian origin required doubled the amount of insulin to maintain normoglycaemia compared to white Caucasian counterparts and it increased with increase in adiposity. It showed that south Asian children had insulin resistance starting from a younger age and therefore prevention of insulin resistance should start from a very young age.

Poor intrauterine growth combined with accelerated growth later in childhood predisposed to the development of insulin resistance later in life.

Sri Lankan data of 5-15 year old children showed that with age insulin levels and insulin resistance increased. HOMA-IR was doubled in the older half of the group denoting that insulin sensitivity decreases with advancing age. HOMA-IR value showed an increase with increase in BMI, WC and waist to height ratio. Insulin resistance was significantly higher in those with abnormal blood pressure, post prandial glucose levels and triglyceride levels. These data show that there is an association between metabolic derangements and insulin secretion. Although diabetic or prediabetic state is not high among Sri Lankan children, our data clearly shows that the insulin secretion in the fasting and fed state are quite high and with the increase in age and adiposity, insulin secretion increases in order to maintain normoglycaemia. High levels of post prandial insulin in the light of normoglycaemia indicated that blood sugar is not a suitable method in detecting cardio vascular derangements at an earlier state. Therefore usefulness of insulin as a screening tool for insulin resistance at a younger age is highlighted by many studies including Sri Lankan data.

Symposium presentation 28

COST EFFECTIVE AND HARMLESS MANAGEMENT FOR KIDNEY DISEASE THROUGH PHYTOTHERAPY BACTERIOTHERAPY & FUNCTIONAL FOODS ON EXPERIMENTAL ANIMALS

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Due to very high cost only 2-3% of kidney failure patients in India get treated. Thus we are trying to search out cost effective treatment of this disease. Our study evaluates the non-pathogenic urease-positive bacterium Sporosarcina pasteurii (Sp) and Lactobacillus as a potential urea-targeted component. The potent therapeutic components present in plant extracts were responsible for reduce oxidative stress and renal toxicity as well as regenerate damage to kidney tissue. Different antioxidant fatty acids have been known as potent anti-oxidants of which anti-oxidant effects are attributed to prevent oxidative stress & lower uremic profile

In our laboratory and collaborating with others we are trying to get active plant extract from root of *Withania somnifera* bark of *Terminalia arjuna* and root of Asparagus *racemosus* and bacterium like Sp *L ingluviei ADK10* and Alpha-lipoic acid by orally feeding to acetaminophen induced uremic Wister strain rats and measure the uremic oxidative hematological histological and toxicity indicators.

We observed that BUN and toxicity indicators were reduced and antioxidant enzymes were increased significantly in plant extract and fatty acid treated uremic rats As well as an innovative enteric dialysis approach using live *Sporosarcina pasteurii* and *Lactobacillus ingluviei, ADK10* when ingested catabolize non protein nitrogenous waste within the gut. BUN and toxicity indicators were reduced and antioxidant enzymes were increased significantly by Sp and *L ingluviei* on uremic rats. In the future we could constitute areas of isolation of active principles from said plants and probiotics with their possible mechanisms of actions on rat model.

Symposium presentation 29

SNAKE VENOM AND ITS EFFECTS ON THE KIDNEY

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Clinical toxinology from natural toxins is an important health problem. Envenoming by venom from snakes poses an important health hazard in the tropics. Snake venoms can cause cellular injury through enzymes, polypeptide toxins, cytokines and mediators. Important venom enzymes consist of proteases, hydrolases, hyaluroxidases, oxidases, phospholipases and esterases. Among these enzymes, phospholipase A2 and proteases, especially metalloproteases, contribute significantly to tissue injury. Proinflammatory cytokines and vasoactive mediators are responsible for inflammatory changes and haemodynamic alterations that can ultimately lead to cellular injury.

As the kidneys are highly vascularized and excretory organs that have the ability to concentrate substances into the urine, they are particularly susceptible to venom toxins. There is a broad clinical spectrum of renal involvement in snakebite. The clinical renal manifestations vary from mild proteinuria, haematuria, pigmenturia, acute kidney injury (AKI) and life threatening acute renal failure. Bites by haemotoxic snakes and myotoxic snakes are the common causes of renal involvement especially acute kidney injury.

The most common clinical renal manifestations seen in human patients is acute tubular necrosis, but all renal structures may be involved. Thus, the occurrence of acute tubulointerstitial nephritis, renal cortical necrosis, mesangiolysis, vasculitis, glomerulonephritis, proteinuria, haematuria and myoglobinuria have also been described. These renal pathological alterations have been attributed mainly to hemodynamic changes in response to envenoming, hemoglobinuria, intravascular clot formation, intravascular haemolysis and rhabdomyolysis and direct venom nephrotoxicity.

A proportion of patients with severe AKI following envenoming may develop chronic kidney disease (CKD). Glomerular sclerosis and interstitial lymphocytic infiltration, tubular atrophy and scarring are the predominant changes in renal pathology in CKD patients.

Symposium presentation 30

CLINICAL ASSESSMENT OF THE LOWER URINARY TRACT-BACK TO BASICS

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The bladder and its outflow, known as the lower urinary tract is the commonest anatomical segment prone to symptoms and diseases within the urinary tract. There have been major developments in the understanding of the patho-physiology of lower urinary tract disorders, which have been applied to clinical practice. However such information is sparsely documented in most reputed textbooks of medical physiology, limiting its accounts on micturition and its applied aspects to small paragraphs. Similar trends are noted in the proportion of teaching and curricula in medical physiology. The common symptoms which arise from the lower urinary tract are classified as "lower urinary tract symptoms"(LUTS).The classification of LUTS by The International Society for Continence in to "Voiding" and "Filling" categories relates to different phases of micturition, when such symptoms arise, aiding clinical correlation and decision making. The degree of bother experienced by patients are assessed by symptom scores such as IPSS (International Prostate symptom Score) which facilitate quantitative assessment. The patho-physiology of bladder outflow obstruction due to prostate enlargement has been better understood and as such, assessment by urine flowmetry, bladder wall thickness and the significance of intra-vesical protrusion of the enlarged prostate in accentuating outflow obstruction has been utilised for clinical decision making. The understanding of the role of alpha-1a receptor mediated smooth muscle tone in the prostatic stroma and that of dihydrotestesterone in the pathogenesis of prostatic hyperplasia, causing dynamic and static obstruction respectively, has been used as therapeutic targets in the treatment of BPH. Whilst previously termed "automatic" and "autonomous" bladders are of little clinical relevance in contemporary practice, classification as "lower motor neuron" and "upper motor neuron" bladders have simplified the understanding of neurogenic bladder dysfunction. Advanced urodynamic assessment using cystometrography and video has seen major improvements both technologically and clinically. Clearer understanding of bladder innervations and its mediating receptors have seen the development of new drugs and interventions for over-active bladder disorders and urinary incontinence. Studies on new methods of ejaculation preserving prostatectomy have challenged the long held traditional concepts on the mechanisms of ejaculation. As evident, major improvements in the clinical management of lower urinary tract disorders seen in the last two decades are based on fundamental physiological principles. Whilst delivering or grasping all such information within a module in physiology may not be feasible, early introduction of such concepts to students and certainly, including them in physiology texts are likely to bring in to perspective, the relevance of applied physiology in contemporary clinical practice.

Symposium presentation 31

AN UPDATE ON THE ENVIRONMENTAL FACTORS AFFECTING MALE FERTILITY

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Documentation of environmental pollutants acting as reproductive toxicants dates back to Roman times. These toxicants are categorized as heavy metals, agricultural chemicals and industrial chemicals. Exposure to such toxicants occurs through ingestion of contaminated water or food and through inhalation of polluted air. These environmental toxicants disrupt the hypothalamo-pituitary-gonadal axis by acting as hormonal agonists or anatogists and/or by disrupting the physiological processes regulating the hormone secretion. Mutagenic and cytotoxic effects on spermatogenesis and sperm function are other possible adverse effects on male reproduction. Biological end points studied include measurement of reproductive hormones in different body fluids, semen analysis and assessment of sperm functions.

Assessments of biochemical and genetic markers as evidence of sperm DNA damage are more advanced methods of risk assessment. Studies on hazard identification, dose response relationship, exposure assessment and risk characterization are found in literature and most of them are animal studies. However there is considerable variation in the methods used, samples assessed and the biological markers measured. It is noteworthy that studies describing markers of susceptibility to these reproductive toxicants in terms of stage of life as in neonatal or prepubertal periods or genetic susceptibility are scarce. With the current revolution in molecular biology and genomics, it is recommended that the effects of reproductive toxicants during the crucial periods of life are adequately studied. The genetic effects draws high priority as these could be the cause of high prevalence of reproductive malignancies. The effects will also be evident in the offspring for many more generations.

Symposium presentation 32

THE EFFECT OF OXIDATIVE STRESS AND ANTIOXIDANTS ON SPERM FUNCTION

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Oxidative stress is induced by reactive oxygen species (ROS) formed as a necessary by product when enzymatic reduction of oxygen occurs during energy production. The primary form of reactive oxygen is the superoxide anion which can then be converted to secondary ROS like hydroxyl radicals, peroxyl radicals or hydrogen peroxide.

ROS have been shown to play a useful role in capacitation of sperms, hyperactivation and for the process of sperm–oocyte fusion. However, ROS can induce cellular damage when passing the unpaired electron on to nearby cellular structures resulting in oxidation of cell membrane lipids, amino acids in cellular proteins and nucleic acids. An excess of ROS can be produced both through physiological or pathological mechanisms.

The antioxidant systems that counteract the effect of ROS are found in high concentrations in the cytoplasm of most cells. Since spermatozoa lack significant cytoplasm, they have a minimal quantity of ROS scavenging pathways. In addition, the high concentration of polyunsaturated fatty acids in sperm cell membranes makes them more susceptible to lipid peroxidation. A large portion of the antioxidant capacity is, therefore, found not in sperms but in the seminal fluid. Seminal fluid contains superoxide dismutase, glutathione peroxidise and catalase as well as non-enzymatic antioxidants likes vitamin E and C, taurine and hypotaurine.

There are two intrinsic sources of free radicals in semen. They are leucocytes and spermatozoa. The combination of the lack of adequate antioxidant mechanisms and the susceptibility to lipid peroxidation is exacerbated by the self-production of ROS by spermatozoa.

Symposium presentation 33

OPTIONS AVAILABLE FOR SEVERE MALE SUBFERTILITY

Professor Athula Kaluarachchi
Professor, Obstetrics and Gynaecology, Faculty of Medicine, University of Colombo, Sri Lanka

Subfertility is a major problem worldwide, affecting at least one in six couples. Over the years there has been a trend of declining sperm counts and an increase in other abnormal sperm parameters. A male factor as the single cause of subfertility is present in about 30% of couples, and in 39% both a male and female factor is present. Once a male factor has been diagnosed, several treatment options are available that aim to increase the total motile sperm count. Regretfully, only few men have potentially treatable conditions.

There is no evidence that hormonal therapies, such as human menopausal gonadotrophin (hMG)/human chorionic gonadotrophin (hCG), androgen, antioestrogens (clomiphene and tamoxifen), prolactin inhibitors (bromocriptine), and steroids improve pregnancy rates in partners of men with idiopathic abnormal seminal fluid parameters. Hypogonadotrophic hypogonadism is treated medically with gonadotropins depending on initial testicular volume. In some cases of idiopathic hypogonadotrophic hypogonadism, spontaneous reversibility of reproductive function is observed.

Randomized controlled trials comparing different surgical treatments of varicocele showed no clear benefit in favour of any technique in relation to improving sperm parameters. The indications for vasoepididymostomy include congenital and acquired obstructions at the level of the epididymis in the presence of normal spermatogenesis. Vasovasostomy is best performed microscopically, which has been shown to be effective in improving pregnancy rates in patients with obstructive azoospermia.

Development of Assisted Reproductive Technology (ART) and the technique of Intracytoplasmic Sperm Injection (ICSI) revolutionized the management of male infertility. Microsurgical epididymal sperm aspiration (MESA)/testicular sperm extraction (TESE) with ICSI is indicated when reconstruction cannot be performed/ not successful. An alternative is percutaneous epididymal sperm aspiration (PESA) from the caput epididymis. If MESA or PESA does not produce adequate spermatozoa, a testicular biopsy can be performed with testicular sperm extraction (TESE) to be used for ICSI. In patients with non obstructive azoospermia due to testicular dysfunction, TESE is the only available option to retrieve spermatozoa for further use in ART. TESE should be performed on multiple locations in the testes. Microsurgical techniques may be used to identify testicular tubules with intact spermatogenesis.

Symposium presentation 34

A SHORT REVIEW ON PLACENTAL TRANSFER OF THYROID HORMONES

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In the early 1980's, thyroidologists were investigating whether thyroid hormones (TH) traverse the placenta from mother to fetus, and if they do, whether they have any role in fetal development. The experimental evidence was both contradictory and confusing.

Many investigators were of the view that Thyroxine Binding Proteins (TBP) by their very nature were a barrier against the passage of TH from mother to fetus. The increase in TBP during pregnancy was claimed as irrefutable evidence for the active prevention of TH from crossing the placental barrier. It was discovered later that the negative results, (i.e., absence of evidence of placental transfer of TH hormones) in experiments were due to them being done during late pregnancy.

Ekins *et al* proposed a model for free hormone delivery in an attempt to reconcile some inconsistencies in previous models for hormone delivery. The Ekins hypothesis gave a physiological explanation for the rise of TBP during pregnancy, which is the increased delivery of TH to the placenta, and therefore, the fetus. Physiological implications of this include the preferential delivery of Thyroxine (T_4) as against T_3 and lowered free-T_4 concentrations and increased total T_4 concentrations in pregnancy. Placental transfer of TH also depends on lipid solubility, molecular weight, and placental metabolism.

Many studies have confirmed placental transfer of TH in early pregnancy as both T_3 and T_4 have been found in human embryos before the onset of fetal thyroid hormone production.

Today, it is an accepted fact that placental transfer of TH in early pregnancy is necessary for fetal growth and development; particularly, brain development.

Symposium presentation 35

Antioxidants from herbs and spices: Potential health benefits.

Professor Ira Thabrew
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Herbs and spices have been used since ancient times for their preservative and medicinal properties, and to impart aroma and flavor to food. In addition to their use as food preservatives prior to the advent of refrigeration, herbs and spices were also used by the ancient Egyptians as embalming preservatives.

Recent studies with a variety of herbs and spices have revealed that they contain high concentrations of antioxidants and phytonutrients and may provide long term health benefits that even outweigh their short term taste sensations. The concentration of antioxidants in many herbs and spices has been reported to be higher than other food groups such as fruits, berries, cereals and vegetables. For example, 1g cloves have been found to have a greater concentration of antioxidants than half cup serving of blueberries or cranberries. The five herbs and spices that rank highest in antioxidant content/ 100g are reported to be cloves, oregano, ginger cinnamon and turmeric.

Antioxidants are substances that can protect against deleterious effects of free radicals that have been implicated in the pathogenesis or progression of many diseases including cardiovascular disease, cancer, degenerative disorders such as arthritis, macular degeneration, and Alzheimer disease, as well as the ageing process. In this presentation, an attempt will be made to highlight some of the major advances in our understanding of the health benefits of antioxidants from a variety of commonly used herbs and spices.

Symposium presentation 36

COCONUT AND ISCHAEMIC HEART DISEASE: FACT OR FICTION?

Dr. Asoka S Dissanayake

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In Sri Lanka, coconut kernel products are a major component (80%) of the dietary fat which accounts for about 25% of the total energy intake. Though the annual per capita consumption of coconuts has not shown any real increase, ischaemic heart disease (IHD), obesity and diabetes are reaching epidemic proportions. In the mid 90s, a link was established between consumption of saturated fat, elevated cholesterol and IHD. Coconut fats (CF), particularly coconut oil (CO) which contains more than 90% saturated fat were branded as harmful. However, critical evaluation of teleologic, teleonomic and experimental evidence does not appear to support this view. Two thirds of the fat in CO is medium chain triglycerides (MCTs), with 50 % of the fatty acids accounted for by lauric acid. MCTs have a satiating effect and reduce weight. They are absorbed without the aid of bile salt micelles, are directly metabolized by the liver and are not incorporated into lipoproteins. There is no good epidemiological evidence to suggest a link between coconut consumption and IHD. Short term dietary intervention studies have not been conclusive and no long term studies have been reported. Experimental studies using non-hydrogenated CO suggest that CO tends to raise HDL cholesterol and have a neutral effect on LDL cholesterol. Furthermore, atherogenesis, which precedes IHD, is a complex phenomenon involving inflammation, disturbances in coagulation and plaque formation. The antioxidant activity and antibacterial activity of CO may contribute to CO being heart friendly rather than unfriendly.

LIST OF ORAL PRESENTATIONS

Free paper session 1 (Hall A) - 08.11.2012, 10.30-11.30am: *Neurophysiology and related areas*

OP 1: ASSESSMENT OF HEARING USING BRAIN STEM AUDITORY EVOKED POTENTIALS (BAEP) IN INFANTS WHO HAD PROLONGED NEONATAL INTENSIVE CARE UNIT (NICU) STAY IN SRI LANKA

Padmini Dahanayake[1], Vajira Weerasinghe[1], Tharaka Dassanayake[1] and Nimal Senanayake[2]
Departments of [1]Physiology and [2]Medicine, Faculty of Medicine, University of Peradeniya, Sri Lanka

OP 2: CURCUMINE PROTECTS AGAINST CEREBRAL ISCHEMIA IN MICE MODEL

Amitava Chakrabarti, Debasish Hota, Ajay Prakash, PGIMER, India

OP 3: NEUROPROTECTIVE AND NEUROREGENERATIVE FUNCTIONS OF HARUAN TRADITIONAL EXTRACT (HTE) AGAINST NEURODEGENERATIVE DAMAGE OF KETAMINE

Mohd Affendi Mohd Shafri[1], Farahidah Mohamed[2], Juliana Md Jaffri [3], Hairuszah Ithnin[4], Abdul Manan[5]
[1,2,3] International Islamic University, [4,5]Universiti Putra, Malaysia

OP 4: ASCORBIC ACID RESTORES ALTERED AVOIDANCE LEARNING AND AMELEORATES HIPPOCAMPAL INJURY IN RATS SUBJECTED TO CHRONIC RESTRAINT STRESS

Raju Suresh Kumar, Melaka-Manipal Medical College (Manipal Campus), Manipal University, India

OP 5: NEUROPHYSIOLOGICAL EVIDENCE OF ATTENTIONAL MODULATION OF VISUAL PROCESSING IN STRIATE CORTEX

Tharaka Dassanayake[1], Patricia Michie[2], Ross Fulham[2,]
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Free paper session 2 (Hall B) - 08.11.2012, 10.30-11.30am: *Gastrointestinal physiology & related areas*

OP 6: ASSESSMENT OF AUTONOMIC NERVE FUNCTION IN PATIENTS WITH IRRITABLE BOWEL SYNDROME

Mohammad Nayem[1], Noorzahan Begum[2], Sultana Ferdousi[2]
[1]Department of Physiology, Dhaka National Medical College, [2]Department of Physiology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Bangladesh

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Lakmali Amarasiri[1], Arunasalam Pathmeswaran[2], Channa D Ranasinha[3], H. Janaka de Silva[4]
Departments of [1]Physiology, [2]Public Health, [3]Pharmacology, [4]Medicine, Faculty of Medicine, University of Kelaniya, Sri Lanka

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University of Calcutta, India

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G. A. S Premakumara[1], W. D Ratnasooriya[2], W. P. K. M Abeysekera[1]
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Pathmasiri Ranasinghe, G. A. S Premakumara, Dilrukshi Wijayarathna, W. D Ratnasooriya
Industrial Technology Institute, Sri Lanka

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Indu Waidyatilaka[1], Angela de Silva[2], Pulani Lanerolle[1], Rajitha Wickramasinghe[3], Noel Somasundaram[4]
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Sadiqa Syed[1], Masood Qureshi[2]
[1]Bahria University Medical & Dental College, [2]Dow University of Health Sciences, Karachi, Pakistan

OP 13: COMPARISON OF CARDIAC UCP2 AND UCP3 EXPRESSION FOLLOWING MYOCARDIAL ISCHEMIA REPERFUSION

Fatemeh Safari[1], Seyedhossein Hekmatimoghaddam[2], Sohrab Hajizadeh[3], Mahdi Forouzandeh Moghadam[4], Gholamreza Bayat[3]
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Seyedhossein Hekmatimoghaddam[1], Fatemeh Safari [2, 3], Sohrab Hajizadeh[4, 5], Mahdi Forouzandeh Moghadam[6], Gholamreza Bayat[4]*
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Achini Vidanapathirana[1], Leslie Thompson[2], Erin Mann[2], Susan Sumner Sumner[3], Li Han[3]
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Ruwani Hewawasam[1], Angela Dulhunty[2]
[1]Department of Biochemistry, Faculty of Medicine, University of Ruhuna, Sri Lanka
[2] Muscle Research Group, John Curtin School of Muscle Research, Australian National University, Australia

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Nepton Soltani, Roya Amiri Tavasoli, Shahla Shorabipour
Hormozgan University of Medical Science, Iran

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Sadaf Mumtaz
Department of Physiology, University of Liverpool, Crown street, Liverpool L69 3BX, United Kingdom

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OP 19: ORGANIZING THE TEACHING OF INTEGRATED PHYSIOLOGY AND THE BASIC SCIENCES THROUGHOUT THE MD PROGRAM AT THE NORTHERN ONTARIO SCHOOL OF MEDICINE

David MacLean, Lisa Graves, Rachel Ellaway
Northern Ontario School of Medicine, Canada

OP 20: DENTAL STUDENTS' PERCEPTION OF EDUCATIONAL ENVIRONMENT AND THEIR PERCEIVED STRESS SCORES: UNIVERSITY OF MALAYA EXPERIENCE

Kyaimon Myint[1], See Ziau Hoe[1], Husain Ruby[2], Rosnah Ismail[2]
[1]Department of Physiology, Faculty of Medicine, University of Malaya, Malaysia
[2]Department of Physiology, Sri Lanka

OP 21: DREEM ANALYSIS OF MEDICAL STUDENTS IN MALAYSIA: COMPARISON BETWEEN A PUBLIC AND A PRIVATE UNIVERSITY

Husain Ruby[1], See Ziau Hoe[2], Kyaimon Myint[2], Rosnah Ismail[1]
[1]Department of Physiology, Sri Lanka
[2]Department of Physiology, Faculty of Medicine, University of Malaya, Malaysia

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Udayanthi Nanayakkara, Dilshani Dissanayake
Department of Physiology, Faculty of Medicine, University of Colombo, Sri Lanka

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Fernando DMS[1], Hewage DC[1], Jayaratne IN[2], Ellawala AT[2]
[1]Department of Physiology, [2]Department of Medical Education & Health Sciences, Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Lanka

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Piyusha Atapattu, Kushani Atukorala
Faculty of Medicine, University of Colombo, Sri Lanka

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Sadia Ahsin, Afshan Shahid, Ghulam Murtaza Gondal
Foundation University Medical College, Pakistan

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Sohail Attaur-Rasool[1], Shahid Hasan[2]
[1]King Edward Medical University Lahore, [2]CMH Lahore Medical College, Lahore, Pakistan

Free paper session 5 (Hall A) - 09.11.2012, 10.30-11.30am: *Molecular medicine and related areas*

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A. M. K. B. G Adikari[1], N. V Chandrasekaran[2], Deepthi de Silva[3], Dinali Ranaweera[1], Palitha Harasgama[2]
[1]Postgraduate Institute of Medicine, University of Colombo, [2]Department of Chemistry, Faculty of Science, University of Colombo, [3]Department of Physiology, Faculty of Medicine, University of Colombo, Sri Lanka

OP 28: FINDING BIOLOGICAL MEANS FOR DIAGNOSIS OR CLASSIFICATION OF THE SCHIZOPHRENIA BY USING PBMC MICROARRAYS

Nishantha Kumarasinghe[1], Ulrich Schal[2], Paul Tooney[2], Surangi Yasawardene[1], Jayan Mendis[3]
[1]University of Sri Jayewardenepura, Sri Lanka, [2]University of Newcastle Australia, [3]National Institute of Mental Health, Sri Lanka

OP 29: CORRELATION OF INSULIN-LIKE GROWTH FACTOR-I AND INSULIN-LIKE GROWTH FACTOR BINDING PROTEIN-1 WITH LEPTIN IN HEALTHY FULL TERM NEWBORNS

K H Tennekoon[1], P Jayanthiny[1], A Karunanayake[1], H Jayasinghe[1], J M Kumarasiri[2], A P De S Wijesundera[2], E H Karunanayake[1]
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Sujata Maiti Choudhury
Department of Human Physiology, Sri Lanka

OP 31: EFFECT OF HYPOTHERMIA ON BLOOD CLOTTING DURING EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO)

Harischandra T[1], Firmin R[2], Kerslake J[3], Goodall A[4], Ahmed A[5], Pavord S [6] and Field D [7]
Departments of [1,2,3,5]Cardiothoracic Surgery, [4]Cardiovascular Sciences, [7]Child Health and [6]Haematology, University Hospitals of Leicester, Leicester, UK.

Free paper session 6 (Hall B) - 09.11.2012, 10.30-11.30am: *Respiratory and Exercise physiology*

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M. Adnan Kanpurwala[1], Zeenat Ayoob[1], Masood A.Qureshi[1], Zaman Shaikh[2]
[1]Department of Physiology, [2]National Institute of Diabetes and Endocrinology, Dow University of Health Sciences, Karachi, Pakistan

OP 33: SPIROMETRIC REFERENCE VALUES FOR FEV_6 IN NON SMOKING, HEALTHY, URBAN PAKISTANI POPULATION

Muhammad Asif Memon[1], Seema Memon[2]
[1]Department of Physiology Ziauddin University, Karachi, [2]Sobhraj Hospital, Pakistan

OP 34: A STUDY ON VENTILATORY FUNCTIONS IN A GROUP OF DEEP SEA SCUBA DIVERS

S Fernando[1], JD Dias[2], SWB Konara[3] and AAJ Rajaratne[3]
[1]General Hospital, Kandy, [2]General Hospital, Ampara, [3]Department of Physiology, Faculty of Medicine, University of Peradeniya, Sri Lanka

OP 35: HEART RATE RECOVERY AFTER ISOMETRIC HANDGRIP EXERCISE IN YOGA PRACTITIONERS

Roopashree K, Rajalakshmi R
Department of Physiology, J.S.S.Medical College, Mysore, Karnataka, India

OP 36: RESPIRATORY SYMPTOMS AND LUNG FUNCTIONS AMONG COAL WORKERS IN THE COAL POWER PLANT, SRI LANKA

Lagath Wanigabadu[1], Savithri Wimalasekera[2], Anthony Seneviratne[1], Wajira Palipane[3], Charith Udagedara[2]
[1]University of Sri Jayewardenepura, [2]Department of Physiology, Faculty of Medical Sciences, University of Sri Jayawardenapura [3]Department of Labour, Sri Lanka

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Kamani Tennekoon[1], Rohan Sugathadasa[1], Jayalath Kumarasiri[2], Ajita Wijesundera[2], Eric Karunanayake[1]
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OP 38: PREDICTABILITY OF INSULIN RESISTANCE BY SKINFOLD THICKNESS

Udai Wijetunga, Samakha Subasinghe, Akila Wijesundara, Dilanka Tilakaratne, Dr. Prasad Katulanda
Diabetic Research Unit, Department of Clinical Medicine, Faculty of Medicine, University of Colombo, Sri Lanka

OP 39: IN-VITRO EFFECTS OF CADMIUM ON CULTURED HUMAN ENDOMETRIAL STROMAL CELLS

Nalinda Silva[1], Kamani Tennekoon[2], Hemantha Senanayake[3], Sameera Samarakoon[2], Sharaine Fernando[1]
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OP 40: ASSOCIATION BETWEEN GONADOTROPHINS AND ANTHROPOMETRIC MEASUREMENTS IN WOMEN WITH PCOS.

Shehla Haider, Nighat
Department of Physiology, Dow University of Health Sciences, Karachi, Pakistan

OP 41: STUDY ON LIPID PROFILE STATUS AND BONE MINERAL DENSITY IN SURGICAL MENOPAUSAL WOMEN

Farhana Kabir[1], Nasim Jahan[2], Nayma Sultana[2]
[1]Marks Medical College, [2]Sir Salimullah Medical College, Dhaka, Bangladesh

OP 42: AGE RELATED FUNCTIONAL AND MORPHOMETRIC CHANGES OF URINARY BLADDER IN PATIENTS WITHOUT LOWER URINARY TRACT SYMPTOMS- AN ULTRASONOGRAPHIC STUDY

Selvantharajah Shiyanth[1], Harsha Dissanayake[1], Srinath Chandrasekera[2], Surangi Yasawardene[1]
[1]Department of Anatomy, [2]Department of Surgery, Faculty of Medical Sciences University of Sri Jayewardenepura, Sri Lanka

OP 43: THE EFFECTS OF DEHYDRATION ON RENAL TUBULAR FUNCTION IN FARMERS FROM AN AREA WITH HIGH PREVALENCE OF CHRONIC RENAL DISEASE

B.M.C.Randika Wimalasiri[1], S.D.Indu Nanayakkara[2], A.M.S.Dhammika Dissanayake[1], Kithsiri B. Jayasekera[1], R.M.I. Upuli Ratnayake[3]
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OP 44: EFFECT OF VITAMIN B12 ON PAIN AND INFLAMMATION IN MALE LONG EVANS RATS
Noorzahan Begum, Masud Imtiaz, Taskina Ali
Bangabandhu Shekh Mujib Medical University, Dhaka, Bangladesh

Free paper session 8 (Hall B) - 09.11.2012, 02.30-04.00pm: Nutrition and related areas

OP 45: CURRY LEAVES (Murraya koenigii) PROTECTS AGAINST LEAD-INDUCED OXIDATIVE STRESS IN RAT LIVER
D. Ghosh, S.B. Firdaus, E. Mitra, M. Dey, D. Bandyopadhyay
University of Calcutta, India

OP 46: VALIDATION OF BIOELECTRICAL IMPEDENCE ANALYSIS AGAINST DUAL ENERGY X-RAY ABSORPTIOMETRY IN ASSESSING BODY FAT MEASUREMENT AMONG ADULTS
E.K.S. Jayathilaka[1], B. Kumerendran[2], M.P.S. Mudalige[1], L.G. Chandrasena[3],K.A.D.C. Gunesekara[3]
[1]Department of Medical Laboratory Science, Faculty of Allied Health Science, University of Peradeniya, [2]Department of Public Health, Faculty of Medicine, University of Kelaniya, [3]Department of Biochemistry, Faculty of Medicine, University of Kelaniya, Sri Lanka

OP 47: BODY COMPOSITION: COMPARISON OF TWO ASSESSMENT METHODS.
Maduka de Lanerolle[1], Angela de Silva[2], Pulani Lanerolle[1], Thisira Andrahennadi[1], Sunethra Atukorala[1]
[1]Department of Biochemistry and Molecular Biology, [2]Department of Physiology Faculty of Medicine, University of Colombo, Sri Lanka

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Maduka de Lanerolle[1], Pulani Lanerolle[1], Angela de Silva[2], Thisira Andrahennadi[1], Sunethra Atukorala[1]
[1]Department of Biochemistry and Molecular Biology, [2]Department of Physiology Faculty of Medicine, University of Colombo, Sri Lanka

OP 49: THE PREVALENCE OF OBESITY AMONG CHILDREN OF A SELECTED GOVERNMENT PRIMARY SCHOOL IN BANGLADESH
Uzire Azam Khan[1], Mohaimenul Abedin[1], Abdus Salam[2]
[1]Department of Physiology, [2]Department of Pharmacology, Noakhali Medical College, Bangladesh

OP 50: ISCHAEMIC HEART DISEASE AND DIETARY HABITS
G.G. Abeyratne, L.L.D.N. Alwis, D.J.D.P. de Silva, U.S. Molligoda, R.S. Nanayakkara, P.P.R. Perera, C.V. Senaratne
Faculty of Medical Sciences, University of Sri Jayewardenepura

OP 51: THE ESTIMATION OF TASTE THRESHOLDS FOR SUCROSE IN HEALTHY SRI LANKAN ADULTS – A PRELIMINARY STUDY
P Hettiarachchi[1], S Wasalathanthri[2], Savithri Wimalasekera[1],[1] C Hewage[1], Himansu Waidyasekera[1]
[1]Department of Physiology, Faculty of Medical Sciences, University of Sri Jayewardenepura, , [2]Department of Physiology Faculty of Medicine, University of Colombo, Sri Lanka

OP 52: VARIATION IN BODY IRON STATUS IN RATS FED DIFFERENT LEVELS OF DIETARY FAT
Phillip S. Oates[1], Umbreen Ahmed[2]
[1]University of Western Australia, [2]National University of Sciences and Technology, Australia

ABSTRACTS OF ORAL PRESENTATIONS

OP 1

ASSESSMENT OF HEARING USING BRAIN STEM AUDITORY EVOKED POTENTIALS (BAEP) IN INFANTS WHO HAD PROLONGED NEONATAL INTENSIVE CARE UNIT (NICU) STAY IN SRI LANKA

Padmini Dahanayake[1], Vajira Weerasinghe[1], Tharaka Dassanayake[1] and Nimal Senanayake[2]
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Background and objectives: To assess hearing status by using BAEP in infants who had prolonged NICU stay.
Methods: Sixty nine infants who were at risk of developing hearing defects due to perinatal factors were included in this study. Forty four of them had prolonged (>5 days)stay in the NICU.Assessment of hearing was done by recording BAEP using Medtronic Evoked Potential machine at theNeurophysiology Unit of theTeaching Hospital, Peradeniya. Hearing threshold was determined based on the BAEP waveform data.
Results: Fourteen out of forty four infants (31.8%) who had prolonged NICU stay had elevated hearing threshold which indicates possible hearing impairment. In 25 infants who had not had prolonged NICU stay, only two (8%) had elevated hearing threshold.Among the infants who had prolonged NICU stay, four (9.1%) had profound hearing loss while10 (22.7%) had moderate hearing loss. Logistic regression analysis showed that the infants who had prolonged NICU stay had a greater chance of hearing impairment compared to those who were not in the NICU, result however was only marginally significant (Odds ratio: 4.82, 95% CIs: 0.99 –23.49).
Conclusions: It is concluded that Prolonged NICU stay appears to be an important risk factor associated with hearing impairment in infants.Therefore hearing screening and early intervention in infants who have a history of prolonged NICU stay is recommended.

OP 2

CURCUMINE PROTECTS AGAINST CEREBRAL ISCHEMIA IN MICE MODEL

Amitava Chakrabarti, Debasish Hota, Ajay Prakash
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Background and objectives: The study was designed to evaluate the effects of curcumin on changes induced by bilateral carotid artery occlusion in male, Swiss strain mice.
Methods: Animals were randomized into three groups (6 animals/ group): Sham-operated, Saline- and Curcumin-treated surgically operated groups. Cerebral ischemia was produced by bilateral common carotid artery occlusion for 10 min. On post- ischaemic day 15, the animals were subjected to: Behavioral studies on elevated plus maze, rota rod, hole- board and kainic acid (20 mg/kg intraperitoneal)- induced seizure susceptibility tests; Biochemical studies for estimation of whole brain tissue malondialdehyde (MDA), catalase, super oxide dismutase (SOD), glutathione peroxidase (GPx) and TNFα; Histopathological study of brain. The protocol was approved by Institutional Animal Ethics Committee.
Results: Compared to the Sham-operated group, the Saline-treated surgically operated group showed significant decrease in the exploratory behavior, retention time on rota rod and significant increase in the seizure susceptibility; brain levels for MDA and TNFα were increased while that for SOD, catalase and GPx were reduced significantly; ischemia caused significant increase in the histopathological score. Intraperitoneal administration of curcumin (300 mg/kg), once-a-day, for 14 days, showed significant reversal of the data for all the parameters compared to the Saline- treated surgically operated group of animals.
Conclusions: Study showed the anti oxidative and neuroprotective effects of curcumin, a phytophenolic compound against cerebral ischemic injury in the mice model.

OP 3

NEUROPROTECTIVE AND NEUROREGENERATIVE FUNCTIONS OF HARUAN TRADITIONAL EXTRACT (HTE) AGAINST NEURODEGENERATIVE DAMAGE OF KETAMINE

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Background and objectives: Ketamine abuse is on the increase in Malaysia. Neurodegenerative change following ketamine use results in debilitating behavioural and cognitive dysfunctions. These changes are thought to be the consequences of network and cellular disorganization and degeneration in the brain involving areas such as hippocampus. Ketamine works by blocking NMDA receptor and hence ketamine research has value in study on NMDA-related neurological disorders such as schizophrenia. This work studied the histological change in rat brain which was exposed to ketamine and the effect of treating ketamine-exposed rats with haruan traditional extract (HTE), a substance which has been shown to have positive neuroregenerative function in cell culture study.
Methods: The changes were studied using cresyl-violet and parameters such as pathological score dead cell count and degenerative change was evaluated.
Results: It was demonstrated that ketamine influences these parameters in exposure length-dependent manners and degenerative change could be ameliorated by supplementation with haruan therapeutic extract (HTE) pre-damage induction but not post-damage induction.
Conclusions: The result adds to the growing number of evidence on neuroplasticity and the possible role of non-endogenous substances in protecting as well as inducing genesis of neurons for diseases that share similar pattern of neurological change as ketamine-abused subjects

OP 4

ASCORBIC ACID RESTORES ALTERED AVOIDANCE LEARNING AND AMELEORATES HIPPOCAMPAL INJURY IN RATS SUBJECTED TO CHRONIC RESTRAINT STRESS

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Background and objectives: The present study was designed to investigate the neuroprotective effects of ascorbic acid in prevention of memory loss induced by chronic restraint stress and to correlate its effects on hippocampal morphology.
Methods: Adult male Wistar rats were assigned to the following groups (n=24 in each group). (1) Normal control (NC). (2) Restraint stress (S) – stressed in restrainers (6 hrs/day) for 21 days. (3) Restraint stress+Ascorbic acid (S+AA) – fed with 100 mg/kg/b.wt of ascorbic acid daily and stressed (6 hrs/day) for 21 days. (4) Ascorbic acid (AA) - fed with 100 mg/kg/body weight of ascorbic acid daily for 21 days. (5) Vehicle control (V) – fed with equivolume of vehicle solution (0.9% NaCl) for 21 days. (6) Restraint stress+Vehicle (S+V) – fed with equivolume of vehicle solution daily and stressed (6 hrs/day) for 21 days. On 22nd day 12 animals from each group were subjected to passive avoidance test and the rest were sacrificed to study hippocampal morphology. Statistical analysis was done using one way analysis of variance, and Tukey's tests. $P<0.05$ was considered significant.
Results: S+AA group showed significant improvement in avoidance learning in comparison with the stressed group. Morphological analysis of hippocampal neurons revealed significant neuroprotective effect of ascorbic acid in S+AA group when compared to the stressed group.
Conclusions: AA could be beneficial in preventing memory loss and provides neuroprotection to hippocampal neurons of rats exposed to chronic restraint stress.

OP 5

NEUROPHYSIOLOGICAL EVIDENCE OF ATTENTIONAL MODULATION OF VISUAL PROCESSING IN STRIATE CORTEX

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[1]Department of Physiology, Faculty of Medicine, University of Peradeniya, Sri Lanka
[2,3]School of Psychology, University of Newcastle, Australia

Background and objectives: Striate cortex (V1) is the first entry point of visual impulses into the cerebral cortex. It is generally accepted that processing in V1 is not amenable to modulation by higher centres. The aim of this study was to examine whether attention can facilitate visual processing at V1.
Methods: 17 healthy subjects (18-26y) performed a line-orientation discrimination task where targets were presented in the periphery of the left-upper or right-lower visual fields, validly or invalidly cued by peripheral cues that preceded the targets by 160ms. The target was embedded in a cluttered visual background, thus increasing the perceptual load. Event-related potentials (ERPs) were recorded during the task and latencies and amplitudes of the ERP components that correspond to striate (C1) and extrastriate (P1 and N1) cortical processing were compared between validly-cued (i.e. attended) and invalidly-cued (i.e. unattended) targets.
Results: Compared to unattended targets, the attended targets elicited more accurate responses ($p=0.002$) and faster reaction times ($p < 0.0001$), confirming that cueing facilitates attentional deployment. Compared to unattended targets, attended targets elicited larger C1 ERP component amplitudes ($p=0.01$) in parieto-occipital scalp electrodes.
Conclusions: The findings suggest that attention can facilitate the earliest stage of visual cortical processing, at least under high-perceptual-load conditions and when the stimulus onset is predictable. We interpret this as an efficient mechanism that enables the brain to filter the task-relevant visual information from competing irrelevant visual content early in processing.

OP 6

ASSESSMENT OF AUTONOMIC NERVE FUNCTION IN PATIENTS WITH IRRITABLE BOWEL SYNDROME

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Background and objectives: Autonomic nerve function (ANF) impairment is related to development of Irritable Bowel Syndrome (IBS). Heart rate variability (HRV) is a useful tool to measure autonomic nerve function activity and also sympatho-vagal balance. The aim of the study was to assess ANF activity by HRV analysis in patients with IBS.
Methods: This cross sectional study was conducted in the Department of Physiology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka from 1st July 2010 to 30th June 2011. Ninety patients aged 20-50 years of both sexes with Irritable bowel syndrome were included in the study group. They were enrolled from the OPD of Gastroenterology in BSMMU. For comparison age and sex matched 30 apparently healthy subjects were also studied as control. The power spectral HRV parameters were recorded by a digital Polyrite. For statistical analysis ANOVA, independent sample t-test and Pearson's correlation coefficient test were performed.
Results: Mean resting pulse rate, mean HR, SBP, DBP, LF, LF norm and LF/HF were significantly higher and total power, HF, HF norm were significantly lower in IBS group compared to those of control. Again total power, HF, HF (nu) were negatively correlate and LF power, LF (nu), LF/HF were positively correlated with duration of disease .But the correlation of total power was statistically significant.
Conclusions: This study concludes markedly lower parasympathetic with concomitant higher sympathetic activity and shifting of sympathovagal balance towards sympathetic predominance in patients of IBS. In addition, decreased vagal modulation may be inversely related to the duration IBS.

OP 7

ASSOCIATIONS BETWEEN GASTRO-OESOPHAGEAL REFLUX DISEASE, UPPER GASTRO-INTESTINAL MOTILITY AND AUTONOMIC FUNCTION IN ADULT ASTHMATICS.

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Background and objectives: Asthmatics have increased prevalence of gastro-oesophageal reflux disease (GORD). Oesophageal hypomotility, delayed gastric emptying (GE) and autonomic hypofunction increase GOR. Our aim was to study the association of GORD with autonomic function, oesophageal motility and GE in asthmatics.
Methods: Thirty consecutive mild, stable adult asthmatics (American Thoracic Society criteria) and 30 healthy volunteers underwent stationary oesophageal manometry, GE by real-time ultrasonography and autonomic function testing. GORD was assessed by symptom questionnaire and 24-hour pH monitoring.
Results: The asthmatics (40% male; mean age 34.8 years (SD 8.4)) and controls (50% male; mean age 30.9 years (SD 7.7)) were comparable. Twenty two (73.3%) asthmatics had pathological GOR on pH monitoring. Asthmatics had fewer peristaltic contractions (80.1% versus 95.0%; P=0.032), prolonged acid clearance times (0.17 seconds versus 0.02 seconds; P <0.001), delayed GE rates (mean ± SE; 80.4 ± 2.2 versus 71.8 ± 2.1; P =0.097) and decreased antral motility (mean ±SE; 4.8 ± 0.2 versus 6.4 ± 0.2; P <0.001) than controls. Sixty nine percent of asthmatics showed hypervagal activity. None showed a hyperadrenergic response. There was no association between autonomic, oesophageal or gastric motility parameters in asthmatics.
Conclusions: A cohort of mild, stable adult asthmatics had pathological GOR, decreased oesophageal motility and delayed GE compared to controls that was associated with a hypervagal response. Vagal hyperreactivity induced acid secretion could lead to a reflex decrease in gastric motility, inducing GOR and secondary reduction in oesophageal motility.

OP 8

AQUEOUS CURRY LEAF EXTRACT PROTECTS AGAINST PIROXICAM- INDUCED GASTRIC ULCERATION BY SCAVENGING HYDROXYL RADICAL IN VIVO

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Background and objectives: Piroxicam and similar NSAIDs reported to possess gastrotoxic and hepatotoxic effects are still widely prescribed around the globe in rheumatoid arthritis and several other clinical conditions. The present study aims at studying the protective effect of aqueous Curry Leaf (Murraya koenigi) Extract (CuLE) against piroxicam induced gastric ulceration in rat model.
Methods: Male Wistar rats weighing 160 –180 g were orally administered Piroxicam (30 mg/kg bw) and another group was pre-treated with CuLE (100mg/kg bw). The degree of ulceration of the stomach was measured by ulcer index.Alterations in biomarkers of oxidative stress, antioxidant enzyme activities and histopathological changes were studied. Babbs and Steiner's method as modified by Bandyopadhyay et al. was used to determine hydroxyl radical generation in vivo in the different animal groups.
Results: We determined the mean ulcer index to be 80 ± 1.9 in animal group fed Piroxicam only. The mean ulcer index was reduced to 5±1.6 in the animals pre-treated with aqueous CuLE. All the other parameters altered following piroxicam treatment were found to be protected when the rats were pre-treated with CuLE. When the rats were pre-treated with CuLE, the level of hydroxyl radical generated in vivo was found to be decreased by two fold compared to that generated in piroxicam treated rats.
Conclusions: Therefore, CuLE has the potentential to provide protection against piroxicam induced gastric ulceration and the results seem to have future therapeutic relevance.

OP 9

IN VITRO ANTIOXIDANT PROPERTIES OF LEAF AND BARK EXTRACTS OF CEYLON CINNAMON (Cinnamomum zeylanicum BLUME)

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Background and objectives: Ceylon cinnamon (CC) (Cinnamomum zeylanicum Blume) known as 'true cinnamon' in the world is used as a spice for culinary purposes in Sri Lanka for centuries. Although many biological activities including antioxidant properties (AP) have been reported, none of them appear to be from authenticated CC. Moreover no studies have been conducted in Sri Lanka to evaluate AP of CC. Therefore, present study evaluates the AP of bark and leaf extracts of CC in vitro.
Methods: Dichloromethane: Methanol (DCM: M) and ethanol extracts of leaf and bark of CC were used in this study. AP were evaluated using total polyphenolic content (TPC), total flavonoid content (TFC), FRAP, DPPH, ABTS and ORAC in vitro antioxidant assays.
Results: Ethanolic extracts of both leaf and bark had significantly high antioxidant activity ($P<0.05$) compared to DCM: M extracts for all the investigated AP. Leaf ethanolic extracts had the highest TPC (44.57 ± 0.51mg gallic acid equivalents/g), TFC (12.00 ± 0.37 mg quercetin equivalents/g), FRAP (125.71 ± 3.21mg $FeSO_4$/g), ABTS (121.78 ± 3.20 mg Trolox equivalents/g) and ORAC (44.74 ± 0.36 mg Trolox equivalents/g) while ethanolic extracts of bark had the highest DPPH radical scavenging activity (107.69 ± 2.01 mg Trolox equivalents/g).
Conclusions: Leaf and bark extracts of CC possess marked AP and indicates the potential use for management of oxidative stress associated conditions. This is the first Sri Lankan study to report AP of authenticated CC collected from an original cultivation in southern Sri Lanka.

OP 10

BIOACTIVE PROPERTIES OF CARYOTA URENS L. (KITHUL) TREACLE

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Background and objectives: Kithul (Caryota urens L.) treacle has been used as a traditional sweetener in Sri Lanka and reputed for different health benefits but no scientific studies are reported. Therefore, in this study, antioxidant, glycaemic activities and lipid lowering properties of Kithul treacle were studied.
Methods: In vitro assays and male Wister rats were used to determine antioxidant activity. Glycaemic response and lipid lowering properties were studied using rat models using standard protocols.
Results: Caryota urens treacle showed radical scavenging activity (0.15 ±0.01 mmole TE/100 g for DPPH and 0.58±0.07 mmole TE/100 g for ABTS+), oxygen radical absorption capacity (3.71±0.19 mmole TE/100 g) and ferric reducing antioxidant power (2.65±0.22 mmole TE/100 g). Treacle significantly increased the serum antioxidant activity (3.70± +0.13 mmole TE/L of serum vs 2.96 ± 0.06 mmole TE/L of serum).
Incremental Area Under the Curve (IAUC) of glycemic response curves of treacle fed rats showed significantly lower IAUC values and a marked (46 %) reduction in glycaemic response of treacle at 2.75 g/kg body wt. dose (equivalent to. 15 to 20 g/serving human consumption) was observed. Treacle showed significantly low triglycerides (53.2 ± 3.5 mg/dl) and low density lipoprotien levels (20.1 ± 3.1 mg/dl) and significantly increased the high density lipoproteins (68.4 ± 4.8 mg/dl).
Conclusions: Kithul treacle posseses antioxidant, antihyperglycaemic and lipid lowering properties. The results provide scientific information on traditionally claimed health benefits and show the potential of Kithul treacle as a bioactive natural sweetener.

OP 11

CARDIOMETABOLIC RISK FACTORS AMONG WOMEN WITH ELEVATED SYSTOLIC BLOOD PRESSURE

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Background and objectives: To assess cardiovascular risk factors in urban women with elevated systolic blood pressure.
Methods: Data is presented for 172 urban women with elevated Systolic Blood Pressure (SBP), who were identified from a larger cross-sectional study on diabetes mellitus and body composition (diabetics=163, non diabetics=454). All women were unaware of their glycaemic status and cardiometabolic risk factor profile at recruitment. SBP was measured according to standard protocol. Glycaemic status was confirmed using FBS and HbA1c (HPLC), triglycerides (TG) and total cholesterol (TC) were measured (Enzymatic Colorimetry). Percentage Fat mass (%FM) was measured using Bio-Impedance Analysis, height, weight and waist circumference (WC) were measured and BMI calculated. Standard cut-offs were used to assess cardiometabolic risk; SBP ≥140 mmHg, HbA1c ≥6.5% (diabetes mellitus), %FM >35, WC >80 cm, BMI >25 kg/m2, TC >200 mg/dl, TG >150 mg/dl.
Results: Mean age of women was 37.5±3.6 years. 56.4% of women with elevated SBP were categorized as having diabetes mellitus and 59.3% had a high WC. Prevalence of overweight or obesity among women was 67.6%, with 84.3% women having a % FM indicative of high body fat. Elevated TC was noted in 91.2% women and 42.1% had high levels of TG's. Almost all women (99.4%) with elevated SBP had at least one other risk factor and 28.4% had all risk factors assessed.
Conclusions: Majority of women with elevated SBP had one or more cardiometabolic risk factors, highlighting the importance of screening for other cardiometabolic risk factors in persons with elevated SBP.

OP 12

ASSOCIATION OF ALDOSTERONE AND CORTISOL WITH CARDIOVASCULAR RISK FACTORS IN PREHYPERTENSION STAGE

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Background and objectives: The Pakistanis are a high cardiovascular risk population having higher incidences of myocardial infarction and stroke etc at younger ages, resulting from undiagnosed and uncontrolled hypertension (HTN). They are also under a variety of stress factors known to be associated with HTN. The study plans to understand the variables associated with initiation of HTN and investigated the relationship of aldosterone and cortisol with some cardiovascular risk factors like obesity, dyslipidemia, hyperglycemia and electrolytes sodium and potassium in different stages of HTN with special focus on prehypertension stage.
Methods: The study was conducted on 276 subjects (25-60 years). The subjects (n=201) had either high normal (prehypertensive; n=55) or higher than normal blood pressure values (HTN stage 1; n=70, & II; n=76), and were compared with normotensive controls (n=75). The Height, weight and waist circumferences (WC) were measured and body mass index (BMI) was calculated. Blood pressure was recorded twice half an hour apart, and classified according to 7th JNC report. Fasting blood sample was drawn for determination of serum cortisol, aldosterone, total cholesterol (TC), Low density lipoproteins (LDL), fasting blood glucose (FBG) and Na+ & K+ using standard laboratory techniques.
Results: Majority of subjects were overweight and obese (80% in pre-HTN, 90% in stage-I and 76% in stage-II as compared to 69% in control group). The mean aldosterone level (ng/dl) was in higher normal range (9.17-12.41ng/dl) and positively correlated ($p<0.05$) to BMI (0.587) in controls, and to TC (0.726) and LDL (0.620) in pre-HTN stage-I. The cortisol level was significantly correlated ($p<0.01$) to BMI (.538), Na^+ (.690) and K^+ (.578) in control group, as well as to BMI (.628) and WC (.679) in pre-HTN group, showing its association with BMI >25.

Conclusions: The study concludes the identification of pre-HTN stage among Pakistani population with successive increase in various risk factors of HTN in relation to aldosterone and cortisol. The study suggests that the interaction of these risk factors with endogenous levels of aldosterone and cortisol may result in increased proportion of HTN.

OP 13

COMPARISON OF CARDIAC UCP2 AND UCP3 EXPRESSION FOLLOWING MYOCARDIAL ISCHEMIA REPERFUSION

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Background and objectives: Our previous studies showed that magnesium (Mg2+)- induced relaxations were completely dependent on nitric oxide (NO) in non diabetic rat mesentric vascular beds, in diabetic rats other mechanisms may be involved. The present study was designed to determine the role of adenosine receptor in Mg-induced vasorelaxation in streptozotocin (STZ) induced diabetic rat vessels.

Methods: Diabetes was induced with and IP injection of 60 mg/kg STZ. Eight weeks after diabetes induction, superior mesenteric arteries were isolated and perfused according to the McGregor method. Prepared vascular beds were constricted with phenylephrine to induce 70-75% of maximal constriction (0.001 M). Mg at concentrations of 0.0001 to 0.1M added into the medium and perfusion pressure was recorded. Theophylline at 1 mM dose, and 3-7 dimethyl propargylxanthine at 0.01 uM dose were added into medium 20 min before phenylephrine administration.

Results: In the presence of Theophyllinse, Mg-induced vasorelaxation in high dose of Mg was totally suppressed. In presence of N (ω)-nitro-L-arginine methyl ester (L-NAME) the response of Mg was completely inhibited at low dose of Mg. But, the relaxatory effect of Mg in presence of A2a receptor blocker was significantly suppressed in high dose of Mg. After endothelium denudation or presence of L-NAME, Mg vasorelaxatory effect in presence of A2a receptor blocker was not suppressed.

Conclusions: From the results of this study it may be concluded that Mg2+- induced relaxation at high concentrations is mediated by adenosine A2a receptors in the diabetic vessels but (Mg2+)- induced relaxations at low concentration were dependent on NO.

OP 14

EFFECT OF LOSARTAN ON NOX2 GENE TRANSCRIPTION FOLLOWING ACUTE MYOCARDIAL ISCHEMIA-REPERFUSION

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Background and objectives: Nicotinamide adenine dinucleotide phosphate (NADPH) oxidase-2 (Nox2) is one of the predominant sources of reactive oxygen species production during myocardial ischemia-reperfusion (IR), and can be induced by angiotensin II. Pharmacological blockers of renin-angiotensin system can exert direct tissue effects independent of their ability to regulate blood pressure, by unknown mechanisms. We aimed at investigating the early changes of cardiac NOX2 gene transcription after myocardial IR in rats treated with losartan, an angiotensin type 1 (AT1) receptor blocker.

Methods: Wistar rats were divided into five groups (6 in each): control, sham operated, IR, losartan without ischemia and losartan with IR. The animals underwent 30 min of left anterior descending artery occlusion and subsequent reperfusion for 180 min. The mRNA expression was determined by real time RT-PCR in ischemic area of the left ventricle (LV) and non-ischemic area of right ventricle (RV).

Results: Compared to control hearts, exposure to myocardial IR significantly increased NOX2 mRNA level in ischemic area of LV ($P<0.001$) but not in non-ischemic area of RV. In losartan without ischemia group, NOX2 mRNA levels were not significantly altered in LV or RV, but in losartan with IR group NOX2 mRNA upregulation in ischemic area was significantly suppressed ($P<0.01$).

Conclusions: Our findings suggest a local effect of ischemia on the NOX2 gene expression. Furthermore, inhibition of NOX2 transcription in ischemic area may be a mechanism of the anti-ischemic effects of losartan.

OP 15

EXPOSURE TO FULLERENE C60 INCREASE THE VASOCONSTRICTOR RESPONSE IN THE UTERINE ARTERY DURING PREGNANCY

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Background and objectives: Pregnancy is a physiological state in which the effects of carbon nanoparticles have not been extensively investigated. Fullerenes (C60) used in different industrial and biomedical applications are reported to have both pro-inflammatory and anti-oxidant properties. Inhaled C60 particles are translocated through the alveolar capillary membrane to blood and distribute to maternal and fetal tissues following intravenous exposure. We hypothesized that exposure to C60 can alter the blood vessel responsiveness during pregnancy.

Methods: Pregnant Sprague Dawley rats were exposed to a single dose of C60 (93.3µg/kg) suspended in polyvinylpyrorrolidone (PVP) saline via intratracheal instillation or intravenous administration between gestational days 17- 19. The rats were sacrificed 24 h post-exposure and vascular responses of thoracic aortic rings, first order mesenteric artery and main uterine artery segments were assessed using wire myography. Cumulative dose-response curves were constructed for phenylephrine, acetylcholine, endothelin 1 and serotonin.

Results: The dose-response curves EC50 and Hill slope values were different for the C60 exposed groups compared with the control groups. Most striking was a 5mN/mm2 increase in the maximum stress to phenylephrine in uterine arteries of C60 instilled animals and a significant reduction in EC50 values with intravenous exposure.

Conclusions: Pulmonary or intravenous exposure to C60 during the late stages of pregnancy increases the vasoconstrictor response of the uterine artery which may contribute to the alteration of the maternal vascular reactivity to support fetal growth.

OP 16

GSTM2C TERMINAL DOMAIN AND ITS MUTANTS ALTER CALCIUM RELEASE FROM CARDIAC RYANODINE RECEPTOR: AN ELECTROPHYSIOLOGICAL ANALYSIS.

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Background and objectives: The ryanodine receptor (RyR) releases Ca2+ from the sarcoplasmic reticulum and is essential for excitation-contraction coupling and contraction in striated muscle. GSTM2 inhibits cardiac muscle ryanodine receptors (RyR2), but not skeletal muscle ryanodine receptors (RyR1). The selective inhibition of RyR2 by GSTM2 has significant clinical potential in the treatment of chronic heart failure. The objective of the present study was to compare the effect of GSTM2 C terminal domain (GSTM2C) with its mutants, F157A and Y160A using single channel lipid bilayer experiments.
Methods: Recombinant GSTM2C and mutants, F157A and Y160A were expressed and purified using the vector, pHUE. Effects of GSTM2C and its mutants, F157A and Y160A on RyR2 were evaluated using single channel lipid bilayer experiments.
Results: GSTM2-C inhibited RyR2 only at a potential of +40 mV, but not at -40 mV. In contrast to the effects of GSTM2C, neither Y157A nor Y160A had any consistent effect on RyR2 activity. This absence of an effect is evident in the individual channel recordings in the presence of ATP and in the average relative open probabilities
Conclusions: This data is consistent with the hypothesis that binding of GSTM2C to RyR2 and the consequent inhibition of the ion channel is dependent on the recognition of a specific fold in GSTM2C.

OP 17

MG^{2+}- INDUCED ADENOSINE-RECEPTOR MEDIATED RELAXATIONS IN MESENTERIC VASCULAR BEDS OF DIABETIC RATS

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Background and objectives: Our previous studies showed that magnesium (Mg2+)- induced relaxations were completely dependent on nitric oxide (NO) in non diabetic rat mesentric vascular beds, in diabetic rats other mechanisms may be involved. The present study was designed to determine the role of adenosine receptor in Mg-induced vasorelaxation in streptozotocin (STZ) induced diabetic rat vessels.
Methods: Diabetes was induced with and IP injection of 60 mg/kg STZ. Eight weeks after diabetes induction, superior mesenteric arteries were isolated and perfused according to the McGregor method. Prepared vascular beds were constricted with phenylephrine to induce 70-75% of maximal constriction (0.001 M). Mg at concentrations of 0.0001 to 0.1M added into the medium and perfusion pressure was recorded. Theophylline at 1 mM dose, and 3-7 dimethyl propargylxanthine at 0.01 uM dose were added into medium 20 min before phenylephrine administration.
Results: In the presence of Theophylline, Mg-induced vasorelaxation in high dose of Mg was totally suppressed. In presence of N (ω)-nitro-L-arginine methyl ester (L-NAME) the response of Mg was completely inhibited at low dose of Mg. But, the relaxatory effect of Mg in presence of A2a receptor blocker was significantly suppressed in high dose of Mg. After endothelium denudation or presence of L-NAME, Mg vasorelaxatory effect in presence of A2a receptor blocker was not suppressed.
Conclusions: From the results of this study it may be concluded that Mg2+- induced relaxation at high concentrations is mediated by adenosine A2a receptors in the diabetic vessels but (Mg2+)- induced relaxations at low concentration were dependent on NO.

OP 18

SPATIAL AND TEMPORAL CHARACTERISTICS OF CA^{2+} SIGNALLING IN ENDOTHELIAL CELLS OF INTACT RAT TAIL ARTERY

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Background and objectives: To investigate the spatial and temporal characteristics of Ca2+ signalling in intact endothelium using histamine, bradykinin and carbachol (CCh).

Methods: Confocal imaging was done using Nipkow disc based confocal imaging system (Ultraview Perkin Elmer UK). Rats were humanely killed under CO2 anesthesia; tail artery removed, cleaned and loaded with Fluo-4 AM (Molecular Probes 15μM) with pluronic. Minimum of 3 animals were used in each set of experiments.

Results: We have found that of all the three agonist used; only carbachol produced strong dose dependent stimulant action in endothelial cells (ECs). Each of the agonists produced complex Ca2+ signalling consisting of initial fast followed by sustained component with Ca2+ oscillations superimposing it. Ca2+ puffs were evoked in 18% and 14 % of cells by low concentrations of CCh (0 1μM and 1μM) respectively. The average diameter and width of Ca2+ puffs initiation sites was 1.9±0 4¼m 1.6±0 1¼m respectively. Length varied between 2 and 6¼m (n=25) ECs responding with Ca2+ waves and oscillations were dependent on concentration of CCh: 0 1μM (20%) 1μM (65%) and 10μM (99%). Ca2+ waves were regenerative; initiated by one or both ends of the cell and propagated across the cell at a speed of 14 - 44¼m/s. With increasing concentrations of CCh (0 1-10μM) the frequency of Ca2+ oscillations ranged from 0 02-0 3Hz with optimal frequency being about 0 2±0 02Hz (n=15).

Conclusions: Ca2+ puffs, waves and oscillations were produced in ECs with variable speed of wave propagation and frequency of Ca2+ oscillation; dependent on the agonist concentration.

OP 19

ORGANIZING THE TEACHING OF INTEGRATED PHYSIOLOGY AND THE BASIC SCIENCES THROUGHOUT THE MD PROGRAM AT THE NORTHERN ONTARIO SCHOOL OF MEDICINE

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The Northern Ontario School of Medicine (NOSM) accepted its first class of students in 2005. Established with a mandate for community engagement and social accountability, there are significant challenges for basic science teaching in this distributed model, which has a major focus on generalism and primary care. To accomplish these goals NOSM has adopted a longitudinal integrated approach based on themes that run the entire length of the 4-year program. Physiology and the basic sciences are addressed in Foundations of Medicine (Theme 4). In addition, this approach integrates basic sciences with the other themes (social and clinical sciences) as well as building a foundation for longitudinal integration throughout the students' clerkships.

One unique aspect to this approach is that students are assessed on themes rather than modules or disciplines. For example, gastrointestinal or reproductive physiology are taught and assessed at different times, however in order to progress to the next phase of their training they must pass all theme 4 content at their current level.

As a result physiology and basic science education for NOSM learners is 1) integrated within the Theme (integrating basic science disciplines), 2) integrated with other Themes (clinical and social sciences), 3) integrated longitudinally throughout the 4-year program and 4) it is aligned with the developing knowledge and practice of medical trainees going into any career track ranging from rural family medicine to surgery. We propose this as an innovative and well-tested model for those looking to adopt similar medical education programs or curriculum reform.

OP 20

DENTAL STUDENTS' PERCEPTION OF EDUCATIONAL ENVIRONMENT AND THEIR PERCEIVED STRESS SCORES: UNIVERSITY OF MALAYA EXPERIENCE

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Background and objectives: It is well known that students' experiences of the educational environment are related to their achievements, satisfaction and success. A positive and equitable learning environment fosters deep self-directed learning and consequently good practice in their profession. Even though demotivating weaknesses may lead to repeated day-to-day stress, with a cascade of deleterious consequences at both personal and professional levels, possible relationship between these parameters has not been discovered. Thus, this study was undertaken to determine the relationship between the students' perception on educational environment and their perceived stress levels.
Methods: Sixty one first year dental students at Dental Faculty, University of Malaya participated in the study. Dundee Ready Education Environment Measure (DREEM) was used for determining undergraduate educational environments and the self-rated perceived stress level was measured by a validated depression anxiety stress scale questionnaire (DASS).
Results: The majority (90.16%) showed positive perception on both educational environment (total mean sores 124.77±16.35/200) and five domains of DREEM, in which the highest percentage was observed for "Students perception of teachers" (90.16%; mean scores 26.97±3.14/44) and the lowest for "academic self-perception" (67.21%; mean scores 19.39±4.55/32). The mean perceived stress score was 17.02±7.43/34+. However, no associations were found between DREEM scores (total and individual domain) and perceived stress levels.
Conclusions: A greater strength in the perception of the educational environment was found and minor actions will need to be addressed for ensuring the overall quality of educational provision. Although not significant, a trend of negative correlation between parameters calls for further research.

OP 21

DREEM ANALYSIS OF MEDICAL STUDENTS IN MALAYSIA: COMPARISON BETWEEN A PUBLIC AND A PRIVATE UNIVERSITY

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Background and objectives: The educational environment is important in determining the success of undergraduate medical education. The purpose of this study was to investigate students' attitudes towards their educational environment. The study was specifically focused on second year undergraduate medical students from a government and a private university.
Methods: The Dundee Ready Education Environment Measure (DREEM) questionnaire was administered to 210 second year medical students of a public university (University of Malaya, UM) and 130 second year medical students of a neighboring private university (MAHSA University College). The questionnaire comprised of 50 items, which were subdivided into 5 domains representing the students' perception of their educational environment; perception of learning, teachers, academic self-perception, atmosphere and social self-perception. Each item was scored from 0-4 on a 5-points scale which consisted of positive and negative statements. The scores obtained were then analysed and compared between the two medical schools by using students' unpaired t-test.
Results: The students from both universities had a positive perception of their educational environment. Nevertheless, the scores obtained from MAHSA students for the overall DREEM score were significantly higher compared to UM students (123.7±16.16 versus 130.2± 0.27) indicating a more positive perception. The MAHSA students also had a significantly higher perception of learning, academic self-perception, perception of atmosphere and social self-perception compared to University of Malaya students. However, there was no significant difference between the students' perception of their teachers.
Conclusions: Students from both institutions, public and private, have a positive perception towards their educational environment.

OP 22

SOCIOECONOMIC, DEMOGRAPHIC AND BEHAVIOURAL FACTORS INFLUENCING LEADERSHIP SKILLS OF THE STUDENTS IN MEDICINE

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Background and objectives: With increased public interest to see doctors take on more significant leadership roles, it is essential to develop strong leadership skills through medical education. The objective was to examine probable determinants of leadership skills among medical students.
Methods: Self Survey of the Authentic Leadership Questionnaire (ALQ) was distributed among 200 first year students of Faculty of Medicine, Colombo. For each of the 4 components of ALQ, an average was calculated from a score of 1-4 given to its items; ≥3 for each component was compatible with good leadership skills. Further information included students' gender, income, district of schooling, academic and extracurricular performances.
Results: Average values for each component for the cohort was <3. Students who did not do extracurricular activities showed poor balanced processing skills (BPS; 2.43±0.28) than those who did (Sports;3.33±0.32, Non-sports activities;3.33±0.32 , Both; 3.24±0.27; p=0.54). BPS were good in students with; an average marks of > 50% for continuous assessments(CAT;3.4± 0.33) and 3A passes for A/L(3.33±0.33), while those who had < 50% for CATs(2.28±0.33;p=0.38), 2A&1B pass(2.25±0.29;p= 0.34) had low BPS. The A/L first attempters (3.33±0.32) and those with 3A passes (3.29 ±0.29) had good self-awareness than those with ≥2 attempts (2.43±0.28, p=0.48) and with 2 A& 1B pass(2.28±0.47,p=0.85). Females demonstrated significantly low ethical skills (2.25±0.39) compared to males (2.36±0.31;p=0.019). Students with ≥2 attempts at A/L had lower ethical skills (2.20±0.40) compared to first attempters (3.19±0.23;p= 0.012). District of schooling and income level did not affect leadership skills.
Conclusions: Female gender and number of attempts at A/L negatively affect ethical leadership skills, while a good academic performance and participation in sports improves leadership skills.

OP 23

RETENTION OF PHYSIOLOGY KNOWLEDGE AND PERFORMANCE AT EXAMINATIONS IN MEDICAL STUDENTS FOLLOWING A TRADITIONAL CURRICULUM

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Background and objectives: To assess the entry criteria and the performance at 2nd MBBS and final MBBS examinations and to correlate the ability to retain physiology knowledge with the performance at the final MBBS Medicine MCQ's among medical students
Methods: The demographic data and the Z scores of students (165) following a discipline based traditional curriculum were obtained from faculty records. Ten True/False type Physiology MCQs from the 2nd MBBS examination were selected and administered to the same students (152) in the final year. The marks obtained (MFin) were compared with the marks obtained for the same questions at the 2nd MBBS (MSec), their overall performance at the 2nd MBBS and with the final year medicine MCQ marks (MMed).
Results: The mean Z score was 2.0366 (range 1.5132 – 2.1974) and 63.6 % were from Western Province. In 66.7% of students the MFin was less than MSec. There were significant positive correlations between Z scores and the overall 2nd MBBS performance(r = .36), MSec and MFin(r = .41), the 2nd MBBS overall performance and MMed(r = .66,) and MFin and MMed(r = .46). The means of marks obtained in the 2nd MBBS and final MBBS were higher in students from the Western Province ($p < 0.01$).
Conclusions: There seems to be a decline in physiology knowledge when the students reach the final year. However those students who do well in the second year seem to retain knowledge better and continue to do well in the final year.

OP 24

PERCEPTION OF SENIOR MEDICAL STUDENTS AND PRE-INTERNS REGARDING PRE CLINICAL PHYSIOLOGY TEACHING

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Background and objectives: Physiology is an integral part of any medical curriculum. Preclinical teaching of physiology provides the basis for understanding organ function. However, many students and pre-interns have indicated that physiology knowledge is poorly recalled and has little relevance to their later clinical practice.
Methods: Perceptions on physiology teaching was assessed in a descriptive cross-sectional study among 146 undergraduates who had completed the basic sciences stream and 118 pre-interns, using a self-administered questionnaire.
Results: In both groups, >85% found physiology learning interesting and >95% stated that when they studied physiology they thought it was relevant for future clinical work. >85% found physiology learning was essential for the interpretation of clinical features and lab reports and planning treatment. Approximately 80% frequently revisited the subject while doing clinical rotations but approximately 30% declared that physiology teaching lacked clinical application.
The two groups differed significantly in the following aspects; 50.9% of pre-interns and 63.7% of undergraduates thought they couldn't remember most of the content taught ($p<0.05$), 73.3% of undergraduates and 28.8% of pre-interns stated that they studied just to pass the examination ($p<0.01$) and 67.8% of undergraduates versus 44.1% of pre-interns preferred physiology teaching by academics to clinicians ($p<0.05$).
Conclusions: Majority perceived that physiology teaching was relevant for future clinical practice, though recall and perceived clinical significance were suboptimal. As recall declined with time, formal repeated reinforcement of physiology knowledge should be considered, preferably during clinical rotations by clinicians, with more focus on clinical applications.

OP 25

EVALUTING THE ROLE OF INTERACTIVE WORKSHOP IN IMPROVING COMMUNICATION SKILLS AND BIOETHICS OF MEDICAL STUDENTS AT FOUNDATION UNIVERSITY MEDICAL COLLEGE, PAKISTAN

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Background and objectives: To evaluate and improve knowledge and skills of communication and bioethics in final year medical students of Foundation University Medical College.
Methods: Ethical approval for the study was granted by the Ethical Review Committee of Foundation University Medical College. A two day workshop on teaching effective communication skills and principles of bioethics was planned and conducted by the department of Medical Education through multidisciplinary faculty of college in April 2012. A total of 102 final year medical students participated in this workshop. Students were divided into 8 groups with 12 students each. A team of pretrained facilitators for each group conducted the group discussions. Teaching strategies including interactive discussions on basic principles of doctor patient relationship, power point presentations, day to day case scenarios, video clips and presentations involving students in role plays were used. Pre and post workshop self evaluation proforma about knowledge and skills of communication and bioethics were rated (0=none, 1=below average, 2= average, 3= above average, 4= very good, 5= excellent) by students.
Results: 89 participants (62 females and 27 males between 22-25years of age) returned the proformas. A significant percentage of students (81%) showed improvement in their knowledge and skills of appreciating bioethical issues like valid informed consent, clinical bioethics including patient confidentiality, end of life issues and breaking bad news and presentation skills by rating as "very good" after participation in the workshop.
Conclusions: Communication skills workshop can successfully be included in undergraduate teaching to improve knowledge and skills of communication and bioethics in medical students.

OP 26

ATTITUDES OF MEDICAL STUDENTS TOWARDS THEIR CAREER CHOICES

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Background and objectives: There is urgent need to understand the behavior of medical students towards their career in context of increasing estrangement of upcoming doctors from the country's health system. This study aimed to evaluate the attitudes and intended choices of entrant medical students regarding professional training and work environment.
Methods & Materials: This was a descriptive study including first-year medical students at a private medical college in Lahore. Questionnaires were distributed among 150 students and results were analyzed using SPSS software.
Results: The response rate was 78% (117/150). Only 10% of respondents wanted to be a primary care physician. For postgraduate training, 69% preferred a foreign country. But, majority (74%) preferred a job in Pakistan. Students favored armed forces (37.4%) as having better career potential over government hospitals (27.8%), private institutions (15.7%) and private practice (19.1%). A meager 10% of respondents wanted to serve the rural communities.
Conclusions: Entrants in a private medical college had negative attitudes towards general practice, primary healthcare and rural service. These attitudes were born out of perceived lack of modern life facilities by respondents accustomed to urban lifestyle. Students were motivated to serve their country but did not prefer employment under the ministry of health. A more balanced, community- based curriculum may inculcate positive attitudes to primary healthcare and rural service. Doctors' service structure should be improved by government to attract more doctors to public service especially in rural areas.

OP 27

STUDY OF THE MYOTONIC DYSTROPHY 1 LOCUS AMONG SINHALESE IN COLOMBO

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Background and objectives: Myotonic dystrophy 1 (DM1) is an autosomal dominant, multisystem disorder affecting, skeletal and cardiac muscles and the endocrine system. The genetic basis of DM1 is > 50 expansion of the CTG repeat sequence in the 3' untranslated region of Dystrophia Myotonica Protein Kinase (DMPK) gene. Normal individuals have (CTG) 5-35 repeats. Populations with the high prevalence of (CTG) 18-35 repeats have a higher prevalence of the disease. This study was designed to assess the distribution of the normal CTG repeat alleles of the DMPK gene among the Sinhalese population of Colombo and compare the frequencies with other populations.
Material and Methods: DNA was extracted from blood from 126 anonymous non DM1 individuals (without the associated features of DM1 and no family history) following informed consent. A first round PCR was carried out followed by a nested PCR. The amplified products were resolved on 3% Nusiene Agarose gel. The fragments were sized by the Bio-Rad molecular imager Gel Doc TM XR+ with image lab software. The copy number of CTG repeats was determined from the size of the amplified fragments.
Results: Fourteen different CTG repeats were identified. The frequencies of the CTG repeats were CTG 5 (76/252; 30%), 6-11(33/252; 13%), 12-17 (136/252; 53%) and 18-27 (7/252; 3%).
Conclusions: This distribution of CTG repeat alleles is similar to that of the Kuwaiti, Thai, Iranian and Indian populations which have a low prevalence of DM1. This would predict a low prevalence of DM1 among the Sinhalese population of Colombo.

OP 28

FINDING BIOLOGICAL MEANS FOR DIAGNOSIS OR CLASSIFICATION OF THE SCHIZOPHRENIA BY USING PBMC MICROARRAYS

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Background and objectives: Finding biological means for diagnosis or classification of the schizophrenia by using PBMC microarrays. This study aimed to identify gene expression profiles in Peripheral Blood Mono nuclear Cells (PBMCs) from treatment-naive patients with schizophrenia and then study the effects of antipsychotic drug treatment.

Methods: Ten treatment-naive schizophrenia patients were recruited from the National Institute of Mental Health. Blood was obtained before and 6 weeks after initiating antipsychotic drug treatment. Ten healthy community volunteers from the University Family Practice Center served as a control group. Samples were hybridized to Illumina HumanHT-12 expression bead chips and genome-wide expression profiles of 48,803 transcripts (25,202 genes) compared between groups by Significance Analysis of Microarrays (SAM).

Results: Of the 10,207 genes which were expressed in PBMCs, SAM analysis identified a total of 624 genes with altered expression (208 upregulated and 416 downregulated) prior to antipsychotic treatment ($P<0.05$) including schizophrenia-associated genes AKT1, DISC1 and DGCR6. After 6-8 weeks of antipsychotic therapy, the patients' symptoms improved and only 106 genes were shown to be altered in PBMCs, suggesting the treatment brought the expression of a large proportion of genes back to control levels.

Conclusions: Our data shows that gene expression signatures can be identified that are not affected by antipsychotic medication and that this signature provides support for a role of infectious diseases and immune dysfunction in the development of schizophrenia. Findings may be useful in the development of a biological means for diagnosis or classification of the schizophrenia syndrome.

OP 29

CORRELATION OF INSULIN-LIKE GROWTH FACTOR-I AND INSULIN-LIKE GROWTH FACTOR BINDING PROTEIN-1 WITH LEPTIN IN HEALTHY FULL TERM NEWBORNS

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Background and objectives: Insulin-like growth factor-I (IGF-I), IGF binding protein-1 (IGFBP-1) and leptin are implicated in the regulation of birth weight. Although a few studies in adults have shown a negative correlation between IGFBP-1 and leptin, no data are available for newborns. The objective was to ascertain possible correlations of IGF-I and IGFBP-1 with leptin in healthy full term newborns.

Methods: Cord blood leptin and soluble leptin receptor (SLR) were estimated by enzyme-immunoassays in full term, singleton healthy newborns (N=110; males=60). All the newborns were delivered by healthy mothers with uncomplicated pregnancies. Newborns were selected (based on the availability of adequate plasma aliquots for leptin and SLR estimation) from a group of 200 in whom we previously reported IGF-1 and IGFBP-1 levels. Correlations were analysed using Spearman rank correlation test. P values were subjected to Bonferroni correction for multiple comparisons.

Results: IGF-I showed a positive correlation with leptin and leptin/ponderal index but the significance disappeared upon Bonferroni correction. IGFBP-1 showed a significant negative correlation with leptin ($r=-0.31$ corrected $p=0.0045$), leptin/ponderal index ($r=-0.303$, corrected $p=0.0065$), and free leptin index (leptin/SLR) ($r=-0.31$, corrected $p=0.005$) even when corrected for multiple comparisons. When analysed after stratification by gender these correlations were limited to female newborns.

Conclusions: IGFBP-1 appears to correlate with leptin levels in full term newborns in a gender specific manner. Correlation seen between IGFBP-1 and leptin normalised to ponderal index, in the absence of a significant correlation between IGF-I and leptin, suggest a possible direct effect of IGFBP-1 on foetal leptin synthesis.

OP 30

COMBINED MIXTURES OF CALOTROPIS GIGANTEA LATEX AND BARLERIA LUPULINA LEAF: NOVEL AMELIORATORS OF TUMOR INDUCED CELL PROLIFERATION AND OXIDATIVE STRESS

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Background and objectives: A number of naturally occurring herbal compounds are very good sources of effective agents to fight against cancer in both preventive and therapeutic strategies. The present study was aimed to explore the antimitotic activities of Ethanolic (EECGL+EEBLL) and water extract (WECGL+WEBLL) mixtures of Calotropis gigantea latex and Barleria lupulina leaf in Allium cepa root and apoptotic and in vitro cytotoxic properties in Dalton's Ascitic Lymphoma (DLA) cell and antiproliferative and antioxidant potency in Dalton's lymphoma(DLA)-bearing Swiss albino mice.
Methods: EECGL+EEBLL and WECGL+WEBLL were subjected to antimitotic study, cell morphology study and in-vitro cell apoptosis study against Dalton's Lymphoma Ascites (DLA) cells at the dose level of 100µg/ml. The combined mixtures were administered intraperitoneally at the dose level of 150 mg/kg body weight /day for 15 consecutive days after 24 hours of DLA cell inoculation (2×106 cell) to mice using 5-fluorouracil as standard drug.Mean survival time, tumor volume, hematological and antioxidant parameters were estimated.
Results: The combined mixtures significantly exhibited the antimitotic activity in Allium cepa root and showed higher degree of membrane blebbing in DLA cell and decreased DLA cell viability. DLA cells treated with both mixtures were associated with cell cycle arrest at G0/G1 phase. Treatment increased the mean survival time and decreased body weight, tumor volume and peritoneal angiogenesis.The mixtures restored most of the hematological and antioxidant parameters to more or less normal levels.
Conclusions: These data reveals that the combined mixtures possess antimitogenic, apoptotic, antiproliferative and antioxidant activities.

OP 31

EFFECT OF HYPOTHERMIA ON BLOOD CLOTTING DURING EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO)

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Background and objectives: Hypothermia is a promising intervention for reducing cerebral ischaemic damage. Neonates who need extracorporeal membrane oxygenation (ECMO) are inherently ill and are at risk of cerebral damage. Studies have shown hypothermia to be neuroprotective, but its effect on coagulation incorporating conventional and temperature adjusted blood tests have not been studied. We aimed to look for a difference in coagulation between neonates who undergo ECMO at mild hypothermia (34^{0}C) and those at normothermia (37^{0}C).
Methods: A prospective, single-centre study was done from October 2006 to November 2008: Babies were randomised to "cooled" and "non-cooled" groups. Blood sampling was done at six time points. Thromboelastography (TEG) values at 34^{0}C and 37^{0}C, routine coagulation tests and cytokines were studied. Requirements of blood products and heparin were noted.
Results: There were 16 neonates and eight were cooled. Mean age was 1.2 days; mean weight 3.4kg and total ECMO time 1877 (mean 117.3 hours). Eight (50%) were males. Mortality was one (6.3%). Data was analysed using the Mann-Whitney Test. Mild hypothermia caused reduced platelet count (p=0.001) and function (p=0.03) at 12 hours post- ECMO and reduced clot formation by 24 hours (p=0.02), after which differences disappeared. Heparin requirement was less in the cooled group (p=0.002). No differences in cytokines were evident.
Conclusions: Transient changes in platelets occur at the onset of ECMO after which there is no difference in coagulation between neonates who undergo ECMO at mild hypothermia and those at normothermia making cooling a safe option for neuroprotection.

OP 32

A STATISTICAL MODEL TO PREDICT PULMONARY FUNCTION INDICES IN INDIVIDUALS WITH TYPE 2 DIABETES MELLITUS

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Background and objectives: The aim of this study was to develop a statistical model as a primary prevention tool which can predict an early change in the pulmonary function indices in diabetic individuals in situations where spirometry is not possible because of any means (as pulmonary function impairment has also appeared to be a complication of diabetes).
Methods: 73 Diabetics and 77 age matched non diabetic individuals, who were non smokers, had no pulmonary disease were recruited. All subjects underwent screening with detailed history, anthropometry, HbA1c and spirometric measurements.
Results: There was a significant reduction in the FVC [mean difference 0.495L (0.27, 0.72), $P < 0.001$], FEV1 [mean difference 0.34L (0.15, 0.53), $P < 0.001$] and FEV1/FVC ratio [mean difference -0.018 (-0.036, -0.0003) $P \leq 0.05$] in the diabetic subjects as compared to the healthy individuals. The following model was built using multivariable regression analysis to predict FVC with adjusted R2 value of 0.778. FVC = β0 + β1 (gender) + β2 (height) + β3(age) + β4(HbA1c) + β5(disease duration 6-10 years) + β5(disease duration >10 years).
Whereas, β0 = -2.807 (constant), β1 = 0.455, β2 = 0.043, β3 = -0.025, β4 = -0.039, β5 (D1) = -0.152, β5 (D2) = -0.282
* Female gender taken as reference
** Duration of disease: ≤5 years (reference), 6 – 10 years & > 10 years
Conclusions: T2DM individuals had lower FVC and FEV1 compared to non diabetics. The effect on the FVC was even more pronounced in diabetics who had inadequate glycemic control and prolonged duration of disease. Therefore, clinicians should regularly assess the diabetic patients for pulmonary function impairment either through spirometry or from the statistical model derived above so as to prevent the respiratory complications that may follow later.

OP 33

SPIROMETRIC REFERENCE VALUES FOR FEV_6 IN NON SMOKING, HEALTHY, URBAN PAKISTANI POPULATION

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Background and objectives: To determine the reference values for FEV_6 and FEV_1/FEV_6 ratio in healthy, non smoking, urban Pakistani adults living in Karachi.
Material and Methods: Spirometry was performed in 504 subjects who were healthy, non smoking between the age of 15-65 years and living in the city of Karachi. The subjects underwent measurement of spirometric flow and volume. The following variables were measured: forced vital capacity (FVC), forced expiratory volume in one second (FEV_1), forced expiratory volume in six seconds (FEV_6) and FEF25-75. Regression analysis using height and age as independent variables were applied to provide predicted values for both sexes.
Results: All PFT variables correlated positively with height and age especially the FEV_6 and FEV_1/FEV_6 ratio and FVC and FEV_1 /FVC ratio. There was negative correlation between pulmonary function specially FEV_6 and age. All parameters correlated positively with height. The greatest negative correlation was found for FEV_1, FEV_6 and FVC in males, whereas the greatest positive correlation was observed for FVC in females. FEV_1, FVC, FEV_6 and FEF25-75 values were obtained in all 504 subjects. Multiple linear regression yielded prediction equations for each parameter based on age and height. Prediction equation using multiple regression analysis formula derived for men and women subjects.
Conclusions: The results of this study provide pulmonary function tests prediction equations especially FEV_6 derived from large healthy, nonsmoking, urban Pakistani population with a wide range of height and age and these values are different form several other prediction equations.

OP 34

A STUDY ON VENTILATORY FUNCTIONS IN A GROUP OF DEEP SEA SCUBA DIVERS

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Background and objectives: In Sri Lanka individuals who are engaged in deep sea diving to collect ornamental fish use minimum protection against the harsh environment of the deep. They do not wear wet or dry suits and use compressed air for breathing during diving. The aim of this study was to assess ventilator functions in deep sea divers.

Methods: The ventilatory functions of 54 deep sea SCUBA divers (age 38± 8 yrs) and 27 fishermen (age 39 ± 8 yrs) was obtained using a portable spirometer (Spiro Flow ST 75). The vital capacity (VC), Forced Vital Capacity (FVC), Forced expiratory volume during the first second (FEV_1), Peak expiratory flow (PEF), Peak expiratory flow at 75% volume ($PEF_{75\%}$), at 50% volume ($PEF_{50\%}$), and at 25% volume ($PEF_{25\%}$) was measured. The mouth pressure was also measured using an industrial digital manometer.

Results: The mean (SD) for VC, FVC, PEF, and mouth pressure in the divers was 4.4 (0.7) L, 4.1 (0.8) L, 8.0 (2.1) L/s and 113 (23.9) cm of H_2O respectively. Mean predicted VC, FVC and PEF values are 4.6 L, 4.5 L and 8.8 L/s respectively for this group. Mean VC, FVC, PEF and mouth pressure in the fishermen was 3.7 (0.9) L, 3.6 (1.5) L, 6.6 L/s, 5.2 (2.6) L/s and 94.7 (18.7) cm of H_2O respectively. Mean predicted VC, FVC and PEF values are 4.4 L, 4.3 L and 8.5 L/s respectively for this group.

Conclusions: SCUBA divers had significantly higher VC (p=0.01), FVC (p=0.05), PEF (p=0.01) and mouth pressure (p=0.001) values than those recorded for fishermen. This may be due to the fact that SCUBA divers have to breath against a higher pressure that makes their respiratory muscles stronger compared to the fishermen.

OP 35

HEART RATE RECOVERY AFTER ISOMETRIC HANDGRIP EXERCISE IN YOGA PRACTITIONERS

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Background and objectives: Yogasanas are physical postures by which the physical revitalization and deep relaxation and mental calmness can be achieved. Monitoring theheart rate in the recovery phase after physical exertion is a simple and non-invasive method for assessing the cardiovascular health and general fitness of subjects. Thus the present study was taken up to examine the effects of yoga on Heart Rate (HR) recovery after isometric handgrip (IHG) exercise in young individuals by comparing with untrained controls.

Methods: This study was carried out on 64 healthy subjects of both sexes in the age group 18-22 years. Handgrip exercise, using handgrip dynamometer, was carried out. HR readings were taken immediately after exercise and 5 minutes after recovery. The study period was 3 months.

Results: Mean and standard deviation was calculated .The basal HR was (69.28+ 7.32) in the yoga practitioners, and (71.71+ 10.34) in the controls. Immediately after exercise, the HR was (75.68+ 8.40) in yoga practitioners and (81.06+ 12.33).After 5 mins, the HR came back to (71.43+ 7.30) in yoga practitioners and (76.43+ 7.30) in controls, which was statistically significant (p<0.005).

Conclusions: This study showed that the HR in Yoga practitioners recovered faster than controls. Faster HR recovery after exercise in yoga practitioners could result from their higher aerobic capacity compared with untrained controls. It is suggested that yoga training induce significant alterations in cardiac ANS modulation at rest and significant acceleration of HR recovery after exercise. We recommend yoga practice as a fitness routine for today's youngsters.

OP 36

RESPIRATORY SYMPTOMS AND LUNG FUNCTIONS AMONG COAL WORKERS IN THE COAL POWER PLANT, SRI LANKA

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Background and objectives: The aim of the study was to determine the association between respiratory symptoms among coal power plant workers and objective respiratory function tests.
Methods: A cross sectional study was conducted amongst 80 workers in the coal power plant. All workers were males. They were assessed using an interviewer administered questionnaire, clinical examination and objective lung function tests. Seven respiratory symptoms present at the time of inquiry which were persistent for more than a month was weighed equally and a score constructed ranging from 0 – 7. Score of ≤1 (Low Exposure- LE) and >1 (High Exposure - HE) were defined as the two symptom groups. Data were analyzed by uni-variate and bivariate analysis.
Results: There was a significant association between the symptom score and type of work amongst the workers ($\chi 2 = 10.2$, df =1, p = 0.001). There was a significantly negative correlation between the symptom score and Forced Expiratory Flow (Pearson's correlation coefficient - 0.259, p =0.02) A significant reduction in the FEF 25-75% was observed in the HE group (Mean ± SD) 2.6 ± 1.1 l/s for LE and 3.2 ± 1.1 l/s for HE, p = 0.031.
Conclusions: Symptom score can support spirometry to assess respiratory dysfunction. A higher symptoms score was associated with small airway dysfunction. We recommend provision of an enclosed work area for office workers and adoption of measures to reduce emission of coal dust. Persistent respiratory symptoms warrants further respiratory assessment amongst these workers.

OP 37

LEPTIN TETRANUCLEOTIDE REPEAT (TTTC)n POLYMORPHISM, MATERNAL LEPTIN AND BIRTH WEIGHT IN UNCOMPLICATED SINGLETON PREGNANCIES

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Background and objectives: To study the effect of (TTTC)n polymorphism of maternal LEP gene and maternal leptin on birth weight.
Methods: (TTTC)n polymorphism of maternal LEP gene (fragment analysis) and maternal leptin levels (enzyme immunoassay) in the 1st and 3rd trimesters were studied in uncomplicated singleton pregnancies (N=253) resulting in full term healthy newborns. Leptin levels and birth weights between genotypes were compared using Kruskal-Wallis ANOVA. Association of leptin with birth weight was studied using Spearman rank correlation.
Results: Maternal leptin levels and birth weights were not significantly different between genotypes. Maternal leptin and leptin/BMI correlated significantly ($p<0.001$ to 0.0001) with birth weight (1st trimester: r=0.332, r=0.299 respectively; 3rd trimester r=0.258, r=0.212 respectively). Upon stratification by genotype, significant ($p<0.05$ to 0.0001) correlations between leptin and birth weight persisted only in class I (1st trimester: r=0.358; 3rd trimester r=0.208) and class II homozygotes (1st trimester: r=0.398; 3rd trimester r=0.531). Leptin/BMI significantly correlated with birth weight in class I homozygotes only in the 1st trimester (r=0.306, $p<0.001$) but in class II homozygotes in both trimesters (r=0.461, r=0.457 respectively; $p<0.01$).
Conclusions: LEP gene (TTTC)n polymorphism modulates the effect of maternal leptin on birth weight. This may partly account for the inconsistent reports on the association of maternal leptin levels with birth weight.

OP 38

PREDICTABILITY OF INSULIN RESISTANCE BY SKINFOLD THICKNESS

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Background and objectives: To assess the ability of skinfold thickness (SFT) to predict the insulin resistance (IR) in young diabetic patients.
Methods: A sample of 1007 adult diabetic patients (age 20- 45 years) were randomly selected and their SFTs (triceps, biceps, suprailiac and subscapular) were obtained. Homeostasis model assessment (HOMA) using insulin and C peptide levels were used to measure IR. Association between SFT and HOMA-IR was determined using the Pearson test and ROC curve analysis.
Results: Out of a sample of 1007, 42.3% were males and the mean age was 36.6 (+/-11.4) years. The mean SFT in males (triceps 10.5mm, biceps 6.1mm, subscapular 21.5mm, suprailiac 18.8mm) was significantly lower than females (triceps 19.3mm, biceps 10.9mm, subscapular 25.4mm, suprailiac 23.5mm) ($p<0.001$). The mean HOMA-IR calculated using insulin levels and C peptide levels was 2.64 (males 2.35, females 2.85, $p<0.05$) and 1.70 (males 1.73, females 1.67, $p>0.05$) respectively. At a cut off value of 2.0 (for HOMA-IR calculated using insulin), 52.7% had IR. All SFT measurements had a predictive value of >60% in predicting IR. Out of all the SFTs, suprailiac SFT showed the highest correlation with HOMA-IR in both males and females and it was more in males than in females ($r=0.279$ vs 0.088).
Conclusions: SFT measurement is a reliable way of predicting IR in diabetic patients especially males. Suprailiac SFT seems to best correlate with IR and this may explain abdominal adiposity being a strong and independent risk factor for glucose intolerance.

OP 39

IN-VITRO EFFECTS OF CADMIUM ON CULTURED HUMAN ENDOMETRIAL STROMAL CELLS

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Background and objectives: To demonstrate the effects of cadmium (Cd) on human endometrial stromal cell cultures derived from women with or without endometriosis.
Methods: Stromal cells were isolated from eutopic endometrial samples from five women with endometriosis (patients) and five women without endometriosis (controls). ESC cultures were established and maintained in RPMI medium. Cultures were treated with Cd at concentrations of 10-6M. At 24 h and 48 h, cell number was counted using the Neubauer haemocytometer. Progesterone receptor (PR) and oestrogen receptor(ER) expression were assessed by immunohistochemistry. Sulphorhodamine (SRB) cytotoxicity assay was used to test the effect of different concentrations of Cd on ESC cultures. After 24 h of Cd treatment, caspase levels in ESC cultures were evaluated with a commercially available ELISA kit. Relative cell proliferation, SRB assay results and caspase levels were analyzed with ANOVA.
Results: In both patients and controls Cd increased the relative proliferation in ESC cultures ($p<0.05$). At 48 h, Cd induced ESC proliferation was higher in patients than in controls ($p=0.02$). Treatment with Cd reduced expression of ER increased expression of PR in the ESC from patients when compared to controls. This effect was most prominent at 48 h. SRB assay results and caspase levels were similar in the two groups.
Conclusion: Metalloestrogen cadmium was capable of inducing oestrogenic effects in cultured endometrial stromal cells that appears to be independent of reduced apoptosis. These effects were more prominent in stromal cell cultures derived from women with endometriosis.

OP 40: ASSOCIATION BETWEEN GONADOTROPHINS AND ANTHROPOMETRIC MEASUREMENTS IN WOMEN WITH PCOS.

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Background and objectives: An elevated serum LH and increased LH/FSH ratio is a very typical finding among PCOS women; however, several studies had shown that serum LH level tends to be normal, rather than more elevated in obese PCOS women. The present study was an attempt to ascertain any association between gonadotrophins secretion and anthropometric measurements in PCOS women.
Methods: This cross- sectional study was done at Gynae/infertility clinics of two tertiary referral hospitals in Karachi; during October 2010 to Feb 2011. 163 PCOS women of reproductive age (18-45years) fulfilling revised Rotterdam 2003 criteria were studied. PCOS women who were pregnant or on any hormonal preparation or oral hypoglycemic agents were excluded. The recorded data include: current age, age at menarche, menstrual irregularities, and presence of hirsuitism, acne, infertility, familial nature, BMI, waist circumference and waist - hip ratio. Hormonal assay for gonadotrophin was performed by chemiluminescent immunoassay.
Results: Mean age of presentation of PCOS subjects was 24.88±5.35 years. Menstrual irregularities (99%) were the commonest presentation followed by acne (88%) and hirsuitism (71%) and obesity (69%). Elevated LH/FSH > 1 ratio was found in 71%.
Conclusions: There is a high frequency of obesity (69%) in PCOS women among the local population. No significant relationship was observed between anthropometric measurements (BMI, waist-hip ratio) and LH/FSH ratio. .

OP 41

STUDY ON LIPID PROFILE STATUS AND BONE MINERAL DENSITY IN SURGICAL MENOPAUSAL WOMEN

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Background and objectives: Dyslipidaemia and osteoporosis in both surgical and natural menopausal women are common health hazards all over the world. Surgical menopausal women may have a greater chance of getting these disorders than natural menopausal women. The objective was to observe lipid profile level and bone mineral density in surgical menopausal women.
Methods: A total number of 90 female subjects were included. Among them 30 surgical menopausal women age ranged from 45-55 years were included in the study group (Group C). Again, 30 natural menopausal women age ranged from 50-60 years were studied as control group (Group B). 30 premenopausal women age ranged from 30-35 years were also included in this study as baseline control (Group A). Serum lipid profile of all participants was estimated by enzymatic method. Estimation of serum estrogen level by MEIA method and measurement of bone mineral density by Dual energy X-ray absorptiometry of all menopausal women were done.
Results: Mean serum triglyceride was significantly ($p<0.05$) higher and serum high density lipoprotein cholesterol was significantly ($p<0.001$) lower in surgical menopausal women than in natural menopausal women. Both spinal and femoral neck bone mineral density and T-score were significantly ($p<0.001$) lower in surgical menopausal women than those of natural menopausal women. Again, bone mineral density is positively correlated with serum estrogen level in both surgical and natural menopausal women.
Conclusions: The present study revealed that surgical menopausal women have a greater chance of having dyslipidaemia and osteoporosis than those of natural menopausal women.

OP 42

AGE RELATED FUNCTIONAL AND MORPHOMETRIC CHANGES OF URINARY BLADDER IN PATIENTS WITHOUT LOWER URINARY TRACT SYMPTOMS- AN ULTRASONOGRAPHIC STUDY

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Background and objectives: To establish age related post-void residual urine volumes (PVR) of Sri Lankans, to establish correlation between PVR, bladder posterior wall thickness and prostate volume and to establish Sri Lankan cut-off values to diagnose Benign Prostatic Hyperplasia (BPH).
Methods: Ultrasonographic (US) measurements of pre-void bladder volume, pre void posterior bladder wall thickness (2cm above the trigone) and PVR were studied in 102 patients without lower urinary tract symptoms who underwent US scans.
Results: Average age was 45.75±14.92 years ranging from 16 to 85. Mean PVR was 26.82ml ranging from 0ml to 110.25ml. Patients were grouped in 10 year periods ranging from 20s to 80s. Mean PVR in individuals below 30 years was 20.80ml which rose upto 61.75ml in Sri Lankan individuals more than 80 years where as western values are 20-30ml. Spearman correlation between age and PVR was significant(0.456,$p<0.01$). PVR also positively correlated with prostate volume (0.407, $p<0.05$) but not with bladder wall thickness ($p=0.3$). No significant correlation was found between pre void volume and PVR ($p=0.288$) as well as bladder wall thickness ($p=0.125$).
Conclusions: PVR positively correlates with age and prostate volume. PVR of Sri Lankans is higher than that of western values although Sri Lankan prostate volume is less than the western values. Posterior wall thickness can be used as an independent indicator of bladder outflow obstruction.

OP 43

THE EFFECTS OF DEHYDRATION ON RENAL TUBULAR FUNCTION IN FARMERS FROM AN AREA WITH HIGH PREVALENCE OF CHRONIC RENAL DISEASE

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Background and objectives: To assess the effect of dehydration on renal tubular function in farmers from an area with high prevalence of Chronic Renal Disease.
Methods: Thirty healthy farmers engaged in high physical exertion during routine farming activity in Padaviya area and twenty healthy sedentary indoor workers in the same area were randomly selected for the study. Urine and serum osmolality, creatinine and electrolytes were measured before and after routine work. The glomerular filtration rate (GFR) was estimated using MDRD and Cockroft-Gault (CG) formulae. A two-sided P-value of, 0.05 was considered as statistically significant.
Results: Serum osmolality of farmers after work indicated a significant dehydration (compare with a cut-off value of 295 mOsm/kg) and sedentary workers did not indicate such dehydration. Thirty two percent of farmers and 7% of sedentary workers indicated a body mass loss (>1%) after work.The mean water intake of farmers and sedentary workers were 2689.11±207.6 ml and 1775±153.6 ml respectively while the urine output was 488.22±59.4 ml and 928.125±81.1 ml respectively. The farmers had a significantly lower mean eGFR result calculated from both MDRD (59.79+27.05 ml/min/1.73 m2) and CG (55.18+22.69 ml/min) formulae when compared to the sedentary workers (MDRD: 85.93+ 18.99 ml/min/1.73 m2, CG: 92.00+24.32 ml/min). The farmers had significantly low urine [Na^+], [K^+], [Cl^-] and osmolality than the sedentary workers both before and after work.
Conclusions: Farmers were dehydrated after work.The sedentary workers were not. The farmer's GFR was in the range of 30-59 ml/min which is categorized as moderately decreased GFR in RIFLE criteria. However, their renal tubules were able to conserve electrolytes in the normal manner of acclimatized persons. Low urinary osmolality observed may be due to aldosterone escape.

OP 44

EFFECT OF VITAMIN B12 ON PAIN AND INFLAMMATION IN MALE LONG EVANS RATS

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Background and objectives: This prospective interventional study was designed to evaluate the effect of Vitamin B_{12} alone on nociceptive pain, inflammatory pain and inflammation.
Methods: Total 24 male Long Evans rats, weighing 225 ± 25 grams were divided into two groups. Single supplemented rats were intraperitoneally treated with a single dose of 15 mg/kg vitamin B_{12} or equal volume of normal saline and chronic supplemented rats were with similar dose and route of treatment for consecutive 7 days. Effect of B_{12} on pain was assessed by warm water tail immersion test and formalin test and on inflammation by the formalin induced paw oedema model. Again relationships of all the pain and inflammatory variables with the serum vitamin concentration after the supplementation were also assessed. Independent sample't' test and Spearman rank correlation coefficient test were used for statistical analysis.
Results: Both single and chronic supplementation of vitamin B_{12} reduced nociceptive pain, inflammatory pain and inflammation and these decrements were negatively correlated with the serum vitamin B_{12} level. In addition, for all the study variables a better trend of decrement was found in the chronic supplementation.
Conclusions: The study reveals the effective role of vitamin B_{12} against nociceptive and inflammatory pain, as well as inflammation, and chronic supplementation is better than the acute one.

OP 45

CURRY LEAVES (Murraya koenigii) PROTECTS AGAINST LEAD-INDUCED OXIDATIVE STRESS IN RAT LIVER

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Background and objectives: Aim of the study was to find therapeutic potentials of aqueous Curry Leaf (Murraya koenigii) Extract (CuLE) against lead induced oxidative damage in hepatic tissue.The objectives were to study the alterations of various stress parameters in lead induced hepatotoxicity and amelioration of the same with CuLE.
Methods: Rats were intraperitoneally injected with lead acetate (15mg/kg body weight), another group was pre-treated with CuLE (50 mg / kg, fed orally),the positive control group was fed CuLE (50 mg / kg), and the control animals received vehicle treatment i.p. for 7 consecutive days.Concentration of lead in liver was estimated by AAS study.The alterations in the activity of the different hematological parameters, bio-markers of hepatic damage, biomarkers of oxidative stress, activities of the antioxidant and some mitochondrial enzymes were studied. Histomorphology and alteration in tissue collagen level was studied through H-E staining and Sirius red staining respectively.
Results: Lead caused alterations in all the parameters studied. All these changes were mitigated when the rats were pre-treated with CuLE. Concentration of lead in liver tissue was also decreased following pretreatment with CuLE.
Conclusions: The results indicate that the CuLE ameliorates lead-induced hepatic damage in experimental rats by antioxidant mechanism(s). CuLE may have future therapeutic relevance in the prevention of lead-induced hepatotoxicity in humans exposed occupationally or environmentally to this toxic heavy metal and may be used for development of new hepatoprotective drugs of herbal origin with less cytotoxic effects.

OP 46

VALIDATION OF BIOELECTRICAL IMPEDENCE ANALYSIS AGAINST DUAL ENERGY X-RAY ABSORPTIOMETRY IN ASSESSING BODY FAT MEASUREMENT AMONG ADULTS

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Background and objectives: To validate the BIA method against Dual Energy X-ray Absorptiometry (DEXA) and to find out the relationship between the fat content of the body and the age, sex and BMI and finally to determine the sensitivity and specificity of BIA and DEXA.
Methods: This descriptive study was conducted during September 2010 to March 2012 at Nawaloka hospital in Colombo. Data was collected using a pre-designed questionnaire and a data entry sheet from all the 20 consecutive persons who fulfilled the criteria. Body Fat Percentage (BFP) was estimated using both DEXA and BIA. Univariate and multiple regression analysis were done using SPSS software.
Results: All the participants were females and had median age of 62 years (IQR: 54 to 67), median BMI of 26.8 kg/m^2 (IQR: 22.2 to 30.5), median weight of 58.3 kg (IQR: 50.2 to 72.7) and median height of 151.5cm (IQR: 147.2 to 157.8). Co-morbidity was seen among 16. Median BFP estimates were lower in BIA (37.2, IQR: 33.9 to 42.1) than in DEXA (44.8, IQR: 39.6 to 47.5). Adjusted R^2 of the regression to predict the DEXA equivalent by BIA, increased from 48% to 80% when height of the patient was added to the model. BFP showed a quadratic relationship with BMI indicating lower estimate of BFP beyond a particular higher levels of BMI.
Conclusions: Although BIA significantly underestimated BFP when compared to DEXA, the prediction improves when the BIA measurements were adjusted for height.

OP 47

BODY COMPOSITION: COMPARISON OF TWO ASSESSMENT METHODS.

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Background and objectives: To compare skinfold thickness (SFT) and Bioimpedence (BIA) equations for the assessment of percentage fat mass (%FM) of Sri Lankan adolescent girls.
Methods: Population-specific equations for assessment of %FM using Skinfold callipers (de Lanerolle et al) and a bioimpedance analyser (de Lanerolle et al) were applied to 160 Sri Lankan adolescent girls (15–19 years). %FM from the two equations were compared with %FM by a stable isotope method as the reference (Fourier Transform Infra-red Spectroscopy-FTIR). Participants were categorised as underweight, normal weight and overweight using age-specific BMI cut-offs.
Results: Both SFT ($R = 0.604$, $P<0.001$) and BIA equations correlated ($R = 0.69$, $P <0.001$) with the reference method (%FM FTIR). The BIA equation correlated ($R = 0.829$, $P<0.001$) best with %FM FTIR when applied to overweight girls. The SFT equation correlated ($R = 0.878$, $P<0.001$) best with %FM FTIR when applied to normal-weight girls. Both equations did not correlate with %FM FTIR, of underweight girls. Compared to the SFT equation, the BIA equation had a lower relative standard error and was more precise with less variance around the mean, regardless of BMI status. Considering the total population, mean bias for estimates of %FM was lower with the BIA equation than with the SFT equation.
Conclusions: Compared to the SFT equation the BIA equation is more accurate and precise. Further, BIA performs better among overweight girls. Therefore BIA equation is the better method for assessment of %FM.

OP 48

A HATTORI CHART ANALYSIS OF BODY MASS INDEX IN ADOLESCENT GIRLS

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Background and objectives: To consider the effects of variation in fat-free mass (FFM) and fat mass (FM) on BMI using Hattori's body composition chart **Methods:** Data on FM measured by deuterium dilution in 113 Sri Lankan adolescent girls (15-19 years) were used in this analysis FFM was calculated FFM/ height2 and FM/ height2 were used to calculate fat-free mass index (FFMI) and fat mass index (FMI) BMI was calculated and girls were categorized as underweight normal-weight and overweight using age-specific WHO cutoffs Data were plotted on Hattori charts.
Results: Mean %FM was 19. 5% (range 8.04% - 49.1%). Six percent (n=9) of girls were overweight 21.2% (n=32) were normal-weight and 59.6% (n=90) were underweight by BMI. %FM correlated well (r=0.934 P <0. 001) with BMI. %FM of underweight girls ranged from 12. 4% - 32 .6% , normal weight ranged from 8.0 % - 16.3% indicating an overlap in %FM ranges of the underweight and normal weight girls. %FM of overweight girls ranged from 34.7 % - 49.1%. A Hattori chart showing the variability in the FMI and FFMI in this population indicates that a wide range of %FM was observed for a given BMI value and a wide range of BMI was observed for a given %FM value.
Conclusions: Though used widely BMI is of limited use as an indicator of %FM.

OP 49

THE PREVALENCE OF OBESITY AMONG CHILDREN OF A SELECTED GOVERNMENT PRIMARY SCHOOL IN BANGLADESH

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Background and objectives: To estimate the prevalence of overweight/obesity among primary school children.
Method and materials: This cross-sectional descriptive study was conducted in the Department of Physiology, Noakhali Medical College, Bangladesh during the period of January-June'12. Students (n=220) of a selected government-run primary school of a district town of Bangladesh were enrolled for the study using convenient sampling. Data on diet, physical activity, height (cm) and weight (kg) were collected using a structured questionnaire. Permission was sought from concerned authorities and participants. BMI <5, 5-85, >85, and >95 percentile were considered underweight, normal, overweight, and obese respectively. Data were analyzed using SPSS and "Excel BMI calculator".
Results: There were 41.4 percent boys. The mean age was 9.3±1.6 years. The main diet was rice or bread made of wheat-flour (85.5%) for breakfast, rice with meat/fish, egg, or vegetables for lunch (95.45%) and dinner (98.64%). Forty-six percent students drank cow's milk and 22.7% soft drinks. Ninety-nine percent students participated in games for a mean period of 2.81±1.25 hours. The mean±SD period of playing outdoor-game, indoor-game and game-at-school was 1.35±0.58, 1.04±0.45, and 0.76±0.31 hours respectively. Eighty-three percent students did household work for a mean period of 1.03±0.65 hours. The mean±SD height, weight and BMI of the students were 126.6±9.9 cm, 22.01±5.07 kg and 13.56±1.60 respectively. Sixty-five percent students were underweight, 34.55% normal weight and 0.45% obese.
Conclusions: The prevalence of overweight/obesity was low and underweight was alarmingly high among students of a government primary school in a district town of Bangladesh.

OP 50

ISCHAEMIC HEART DISEASE AND DIETARY HABITS

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Background and objectives: The incidence of ischaemic heart disease (IHD) is rising globally. Although diet is an established risk factor, the number of studies that have focused on the Sri Lankan diet is sparse. The objective of the study was to identify the components and their frequencies of Sri Lankan diet that influence the risk of IHD.
Methods: A case-control study was carried out using 147 subjects for each group. Samples were selected from patients of medical and cardiology wards of Colombo-South-Teaching-Hospital and Sri-Jayewardenepura-General-Hospital. Patients who were diagnosed of having IHD for the first time within the past six months from data collection were selected as cases. Those with no past history IHD were selected as controls. An interviewer-administered questionnaire was used for the evaluation of dietary habits. There was no comparable gold-standard in constructing the questionnaire and therefore the question of validation did not arise. Anthropometric measures were recorded. Body-mass-index, waist-to-hip-ratios were calculated accordingly. Dietary data were analyzed using odds ratios and chi square tests.
Results: Among cases, consumption of fried-food, fast-food and coconut-oil for >3 times/week is about twice higher than the controls (fried-food: P=0.001, OR=2.199) (fast-food: P=0.03, OR=1.994) (coconut-oil: P=0.025, OR=1.817). Among controls, consumption of pulses for >3 times/week (P=0.017, OR=2.271) and intake of plain milk for >once/day (P=0.014, OR=2.156) is twice higher than cases.
Conclusions: Consumption of fried-food, fast-food and coconut-oil is associated with an increased risk of IHD. Consumption of pulses and plain-milk is associated with a reduced risk of IHD.

OP 51

THE ESTIMATION OF TASTE THRESHOLDS FOR SUCROSE IN HEALTHY SRI LANKAN ADULTS – A PRELIMINARY STUDY

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Background and objectives: Changes in taste sensitivity is known to influence food choices which in turn contribute to the occurrence and severity of many diseases. The aims of this preliminary study were to get a baseline picture of taste sensitivity for sucrose in healthy adults and pretest and improve protocols prior to a larger study.
Methods: 30 adults (25-60 years) without known systemic diseases were studied. Baseline data was obtained using an interviewer administered questionnaire. Weight, height, waist and hip circumferences were measured and BMI and waist-hip ratio were calculated. Detection and recognition thresholds for sweet (sucrose) taste were determined using the multiple forced-choice ascending concentration series method where subjects tasted a series of sucrose solutions prepared in ¼ log dilutions
Results: The mean (±SD) detection and recognition thresholds in this sample were 8.29±5.73 and 17.73±14.06 mmol/L respectively. The recognition threshold was positively correlated (r=0.423; p=0.05 level) with the detection threshold. Although both detection and recognition thresholds showed no statistically significant correlations with age and BMI, the recognition threshold showed a significant negative correlation (r=-0.472; p=0.01 level) with the waist to hip ratio.
Conclusion: A wide variation in taste threshold values was evident in the sample studied. A high waist to hip ratio which indicates abdominal obesity was found to be associated with high taste sensitivity for sucrose suggesting a possible physiological mechanism operating to reduce sugar intake in obese individuals.

OP 52

Variation in Body Iron Status in Rats fed Different Levels of Dietary Fat

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Background and objectives: Since the liver maintains iron homeostasis via hepcidin expression and integrates energy dependent metabolic pathways, it is possible that regulation of these processes overlap. For example, the transcription factor CCAAT/enhancer binding protein (C/EB) operates in both fat metabolism and in the expression of hepcidin. Here we evaluated the effect of eating different levels of dietary lipids on body iron status and gene expression.

Methods: Male Sprague-Dawley rats were fed standard (35% energy from fat), high fat (71% energy from fat) liquid diets or stock solid diet (9% energy from fat), ad libitum for 5 weeks. The iron contents of the diets were the same and food intake was measured. After 5 weeks blood and plasma iron parameters, tissue non-heme iron and hepatic gene analysis of iron regulatory proteins were evaluated.

Results: Haemoglobin, mean corpuscular haemoglobin concentration, plasma iron and transferrin saturation were significantly high and haematocrit was significantly low in standard diet group. Hepatic and spleen iron were significantly low in the standard diet group.Of the iron regulator genes measured (C/EBP), transferrin receptor 1, transferrin receptor 2 (TfR2), hemojuvelin and HAMP/hepcidin) hepcidin mRNA were significantly lower and hemochromatosis protein (HFE) was significantly higher in the standard diet group. Genes involved in hepatic iron transport (Divalent metal transporter 1 (DMT1 IRE), DMT1 nonIRE, Ferroportin and TfR2) were not different between the three groups.

Conclusions: Transferrin saturation is not the sole determinant of hepcidin expression. Macronutrient composition of the diet can affect iron metabolism possibly involving HFE mediated hepcidin expression.

LIST OF POSTER PRESENTATIONS

Gastrointestinal physiology and related areas

PP1: COMPARISON OF SELECTED HEALTH RISK BEHAVIOURS AND ATTITUDES BETWEEN NEWLY ENTERED AND FOURTH YEAR STUDENTS OF COLOMBO MEDICAL FACULTY IN 2010

Sandun Prabath, Paramarajan Piranavan, Janitha Suraj
Department of Pathology, Faculty of Medicine, University of Colombo, Sri Lanka

PP 2: ISOLATION & CHARACTERIZATION OF ANTIHYPERTENSIVE PEPTIDES IN SELECTED CURD BRANDS

Melani Dabarera, Lohini Athiththan, Rasika Perera
Department of Biochemistry, Faculty of Medical Sciences, University of Sri Jayawardenapura, Sri Lanka

PP 3: ULTRASOUND AND CT SCAN FINDINGS OF PATIENTS SCREENED FOR HEPATOCELLULAR CARCINOMA AT NCTH: A CLINICAL AUDIT.

W. D.U. M Wijesinghe
Department of radiology, North Colombo Teaching Hospital, Ragama, Sri Lanka

Neurophysiology and related areas

PP 4: A STUDY ON THE HEARING THRESHOLD OF DEEP SEA DIVERS IN SRI LANKA

S.Fernando[1], A.A.J.Rajaratne[2], J.D. Dias[3], S.W.B. Konara[2] and Ishanthi Silva[2]
[1] General Hospital, Kandy, [2] Faculty of Medicine, University of Peradeniya, [3] General Hospital, Ampara, Sri Lanka

PP 5: A STUDY ON THE HEARING THRESHOLD OF SOLDIERS WHO WERE DISABLED IN THE WAR IN SRI LANKA

Kapila Idirimanna[1], Rohitha Hanangalaarachchi[1], Rohitha Gunerathna[2], Janaprasaad Wijethunga[1], Sandye Walpola[3]
[1]General Hospital, Kandy, [2]Teaching Hospital, Peradeniya, [3]General Hospital, Kurunegala, Sri Lanka

PP 6: ELECTRO DIAGNOSTIC STUDY IN HEALTHY SUBJECTS AND PATIENTS OF "MOTOR NEUROPATHY".

Husan Bano[1], Nighat Rukhsana[2], Fatima Mannan[3], Dr. Abdul Mannan[4]
[1]Department of Physiology, Al-Tibri Medical College, Isra University Karachi Campus, Gadap Town Malir, [2]Department of Physiology, Dow international Medical College , DUHS Karachi, [3]Ziauddin Medical University Karachi, [4]Department of Medicine, Liaquat National Hospital Karachi, Pakistan

PP 7: OUTCOME OF FUNCTIONAL MOTOR DISABILITY IN ANKLE DORSIFLEXION IN CHILDREN WITH CEREBRAL PALSY FOLLOWING LOW DOSE BOTULINUM TOXIN A INJECTION

Wadugodapitiya S.I.[1], Weerasinghe V.S.[2], Suraweera H.J.[3], Kudagammana S.T.[4], Dassanayake T.L.[2]
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PP 8: RELATIONSHIP BETWEEN PSYCHOPHYSIOLOGICAL STRESS LEVEL AND SLEEP QUALITY IN UNIVERSITY STUDENTS

Ali Muhammad Soomro[1], Nagina Parveen[2], Naseem Aslam Channa[3]
[1]Department of Physiology, [2]Department of Psychology and [3]Institute of Biochemistry
University of Sindh, Jamshoro, Pakistan

PP 9: VITAMIN B12 STATUS AND ITS IMPACT ON NEURAL FUNCTION ACROSS THE LIFE CYCLE OF HEALTHY HUMAN SUBJECTS

Sucharita S, Vaz M
Department of Physiology, St John's Medical College, Bangalore, India

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Mythreye Thayabaran[1], Surangi Yasawardene[2]
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PP 82: CHANGES IN RED CELL INDICES AND SERUM FERRITIN AS MARKERS OF HEMOGLOBIN IMPROVEMENT IN PAKISTANI PREGNANT ANAEMIC WOMEN, RECEIVING VARYING ORAL IRON SUPPLEMENTS

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PP 85: WEIGHT, LIPOPROTEIN PROFILE, AND DIETARY BENEFITS AFTER SIX MONTHS OF A COMMERCIAL WEIGHT LOSS PROGRAM AMONG URBAN POPULATION

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PP 86: PHYSICAL ACTIVITY, DIETARY PATTERNS AND BODY MASS INDEX (BMI) OF GRADE 10 AND 11 STUDENTS IN AN URBAN SCHOOL IN SRI LANKA

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Others

PP 87: A GENETIC STUDY ON MUSCLE POWER-BASED PERFOMANCE IN SWIMMERS – A COMPARATIVE STUDY

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PP 88: PERCEPTION OF BASIC MEDICAL SCIENCE TEACHERS ON UG OSPE IN A MEDICAL INSTITUTE

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ABSTRACTS OF POSTER PRESENTATIONS

PP 1
COMPARISON OF SELECTED HEALTH RISK BEHAVIOURS AND ATTITUDES BETWEEN NEWLY ENTERED AND FOURTH YEAR STUDENTS OF COLOMBO MEDICAL FACULTY IN 2010

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Background and objectives: With the proper guidance for lifestyle modifications only, the society can overcome the currently rising burden of non-communicable diseases.Therefore it is worth measuring the prevalence of health risk behaviors among medical students and how it evolves during the course of medical education.This study was designed to compare the selected health risk behaviors and attitudes between newly entered (NE) and fourth year (FY) students of Colombo medical faculty in 2010.
Methods: 391 students participated in this descriptive cross-sectional study representing NE and FY students of Colombo Medical Faculty in year 2010. A self administered questionnaire on selected health risk behaviors and attitudes was used. Socio demographic data, selected health risk habits (Physical activity, Dietary habits, Smoking, Alcohol intake) and attitudes on individual health risk habits were analyzed using chi square test and odd ratio.
Results: The total prevalence of smoking (NE-2.1% Vs FY-5.9%) and alcohol intake (NE – 7% Vs FY-16.2%) were low. Significant differences were observed in skipping of a meal ($\chi 2=25.416$; df=1; $p<0.05$ and OR=0.311;95%CI 0.196-0.495), alcohol intake ($\chi 2=7.998$; df=1; $p<0.05$ and OR=0.387; 95%CI 0.197-0.761) and smoking ($\chi 2=4.840$; df=1; $p<0.05$ and OR=0.261;95%CI 0.072-0.939).Statistically significant differences were found on the prevalence of smoking,alcohol, skipping meals and responses in some of the attitude questions.
Conclusions: Our findings suggest the importance of considering interventions focused on promoting healthy student lifestyles within the medical school and the necessity for further studies on this area.

PP 2
ISOLATION & CHARACTERIZATION OF ANTIHYPERTENSIVE PEPTIDES IN SELECTED CURD BRANDS

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Background and objectives: The ACE inhibiting peptides in curd varies with the bacterial species and milk type hence different brands have different peptides. Thus the objective of this study was to isolate and characterize the antihypertensive peptides in curd brands produced in Sri Lanka.
Methods: Whey fractions were separated by high speed centrifugation (6000 rpm) of curd and peptides in whey were isolated using reverse phase-HPLC and matched with peptide standards. Eluted fractions were analysed for ACE inhibitory activity using modified Cushman and Cheung method.
Results: Seven major peaks and five minor peaks were observed in HPLC elution profile of whey. These peaks were compared with the elution patterns of peptide standards. Tyr-Gly-Gly-Phe-Met, Tyr-Gly-Gly-Phe-Leu and Ile-Pro-Ile peptides matched with both brands. Highest ACE inhibitory peptide was obtained for a penta peptide in both brands (brand 2 had 90% inhibition and brand 1 had 73% inhibition). Amino acid and dipeptide concentration was higher in brand 1 and tri-octa peptide concentration was higher in brand 2.
Conclusions: High ACE inhibition was expressed with a penta peptide. The sequence of the peptide closely matched with Tyr-Gly-Gly-Phe-Met standard. Thus whey has the potential to be a good functional food in hypertensive subjects.

PP 3

ULTRASOUND AND CT SCAN FINDINGS OF PATIENTS SCREENED FOR HEPATOCELLULAR CARCINOMA AT NCTH: A CLINICAL AUDIT.

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Background and objectives: To describe the characteristics of hepatocellular carcinoma on Ultrasound (US) and Computed Tomography (CT) and assess suitability of US in screening for Hepatocellular carcinoma (HCC).
Methods: All patients who underwent both US and CT at NCTH Ragama for HCC screening from March 2011 to March 2012 were included and imaging findings were statistically analyzed.
Results: A total of 44 patients comprised the study population. 35(79.5%) were male and the mean age of the population was 62years (SD 11years). Of the 33 patients who were diagnosed to have hepatocellular carcinoma 32 (96.9%) were detected on ultrasonography. Among those with HCC 26 (79%) patients had cirrhosis and there was a statistically significant association between the presence of liver cirrhosis and hepatocellular carcinoma (p=0.036). All the lesions diagnosed to be hepatoma on CT were solid lesions on ultasonograpy and 10(30%) were hypoechoic, 13(39%) were hyperechoic and 5(15%) of mixed echogenicity. On CT, 24(75%) were hypodense but this was not a statistically significant finding. (p=0.546). Arterial enhancement was demonstrated in 29(88%) which was a statistically significant (p<0.001) feature of hepatoma. Out of the 33 patients with HCC, 6 had portal vein thrombosis. Of the 33 patients 14(42%) had multifocal hepatoma and being multifocal HCC was not significantly associated with PV thrombosis (p=0.618).
Conclusions: Ultrasonography is an imaging modality with high sensitivity in detecting liver focal lesions and is suitable as a screening investigation. There were no imaging features specific for hepatoma on ultrasound.

PP 4

A STUDY ON THE HEARING THRESHOLD OF DEEP SEA DIVERS IN SRI LANKA

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Background and objectives: In Sri Lanka about 300 individuals engage in deep sea diving as a profession mainly to collect ornamental fish. On average they go to depths of 30 metres about 5 times each of 30 minute periods a day. Deep sea environment is known to cause problems in ear that may lead to hearing loss. We conducted this study to examine hearing loss in divers who are engage in collecting ornamental fish. We have also studied a group of fisherman as a control group.
Methods: Fifty divers (mean age 38 $\pm$ 8.9) and thirty three fisherman (mean age 42.8 $\pm$ 7.6) were tested individually in a low sound environment using a Type 2 audiometer (Interacoustics, Denmark). Hearing thresholds were measured once at each of seven pure tone frequencies (0.5, 1, 2, 3, 4, 6 and 8 kHz) in each ear. Individuals were categorized using mean current hearing thresholds (dB HL) from 0.5 to 8 kHz. They were grouped into normal (-10-15), slight (16-25), mild (26-40), moderate (41-55), moderately severe (56-70), severe (71-90), profound (91+) according to the mean hearing threshold at all seven frequencies recorded.
Results: Hearing loss in divers for the left ear were found to be normal (4%), slight (18%), mild (54%), moderate (8%), moderately severe (10%) and severe (2%) and profound (4.10%). For the right ear normal (2%), slight (12%), mild (62%), moderate (18%), moderately severe (6%). Hearing loss in fishermen for the left ear was normal (0%), slight (18.2%), mild (72.7%), moderate (9.09%). For the right ear hearing loss was normal (0%), slight (12.1%), mild (69.7%), moderate (15.2%), moderately severe (3.0%).
Conclusions: It appears that there are more moderately severe and severe hearing loss in diving individuals compared to the fishing group.

PP 5

A STUDY ON THE HEARING THRESHOLD OF SOLDIERS WHO WERE DISABLED IN THE WAR IN SRI LANKA

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Background and objectives: Research done in the USA demonstrates large scale hearing loss in soldiers returning from war zones in Afghanistan and Iraq. No previous study has reported hearing loss in military personnel in Sri Lanka. We conducted this study to examine the hearing of disabled soldiers in the Sri Lankan army.

Methods: The hearing threshold of 122 disabled military personnel (mean age 33.95± 7.25) was tested using a Type 2 audiometer (Interacoustics, Denmark). All the disabled soldiers who had limb and trunk injuries in two camps were included in the study while those who had head injuries were excluded. Hearing thresholds were measured once at each of seven pure tone frequencies (0.5, 1, 2, 3, 4, 6 and 8 kHz) in each ear. Individuals were categorized using mean current hearing thresholds (dB HL) from 0.5 to 8 kHz. They were grouped into normal (-10-15), slight (16-25), mild (26-40), moderate (41-55), moderately severe (56-70), severe (71-90), profound (91+) according to the mean hearing threshold at all seven frequencies recorded.

Results: Hearing loss for the left ear in these soldiers were; normal (4.10%), slight (51.64%), mild (24.41%), moderate (9.01%), moderately severe (3.28%), severe (2.46%) and profound (4.10%) respectively. For the right ear; normal (9.02%), slight (45.08%), mild (24.41%), moderate (8.20%), moderately severe (4.10%), severe (6.56%) and profound (1.64%) respectively.

Conclusions: It can be concluded that exposure to extreme sounds in the battle fields has lead to the considerable hearing loss among these handicapped military personnel.

PP 6

ELECTRO DIAGNOSTIC STUDY IN HEALTHY SUBJECTS AND PATIENTS OF "MOTOR NEUROPATHY"

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Background and objectives: To study the pattern of electrophysiological variables in "motor nerves" for detection of neuropathy.

Methods: This study was carried out in the department of Physical Medicine and Rehabilitation Jinnah Postgraduate Medical centre (JPMC) Karachi. This was an experimental observational study carried out from Dec.2010 – Aug. 2011. Patients with motor neuropathy (n=30) and normal healthy subjects (n=18) were examined. The action potential of normal subjects and patients were recorded by electromyography (EMG).Motor nerve conduction velocity (NCV) and other variables such as proximal latency (PL), distal latency (DL), conduction time (CT), and amplitude of motor action potential (MAP) recorded in median, ulnar, posterior tibial and common peroneal nerves by given supra-maximal stimulus of 200-250 volts for duration of 0.2 m.sec (6 times higher than motor threshold).

Results: Our results shows slow nerve conduction velocity, reduced amplitude of motor action potential and prolonged distal latencies in median, ulnar, posterior tibial and common peroneal nerves. The PL, DL, CT were significantly increased ($P<0.01$), where as NCV and MAP significantly reduced in all cases of motor neuropathy ($P<0.01$).

Conclusions: The study results proved that electrophysiological examination using EMG/NCV is a valuable electro-diagnostic test for early diagnosis of abnormal functions of nerve and its appropriate disorders.

PP 7

OUTCOME OF FUNCTIONAL MOTOR DISABILITY IN ANKLE DORSIFLEXION IN CHILDREN WITH CEREBRAL PALSY FOLLOWING LOW DOSE BOTULINUM TOXIN A INJECTION

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Background and objectives: To assess the outcome of functional motor disability in ankle dorsiflexion in children with cerebral palsy who had spastic diplegia following low dose botulinum toxin A (BTX-A) injection.
Methods: Ten children with cerebral palsy who had spastic diplegia, who had received low dose BTX-A injection to gastrocnemius-soleus group of muscles were taken for this study. They had undergone a course of physiotherapy treatment following BTX-A injection. The main outcome measures were range of motion of affected joints, muscle tone, gait pattern and selective motor control of dorsiflexion. These children were assessed before the injection and 3 months post-injection.
Results: Muscle tone (p=0.035), range of motion of both right and left ankle dorsiflexion (p=0.001, p=0.002) showed a statistically significant improvement. There was a marked improvement in selective motor control of dorsiflexion (p=0.016). In the physician rating scale for gait there was a significant improvement in the timing of heel rise in the gait cycle (p0.089).
Conclusions: Standard BTX-A treatment recommended for cerebral palsy is expensive. Results of the present study shows that low dose BTX-A injection to gastrocnemius-soleus group of muscles decreases the spasticity and improves the functional ability of ankle and foot in children with cerebral palsy compared to the improvement reported in the literature using standard treatment.

PP 8

RELATIONSHIP BETWEEN PSYCHOPHYSIOLOGICAL STRESS LEVEL AND SLEEP QUALITY IN UNIVERSITY STUDENTS

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Background and objectives: Forced atmospheric changes affect the psychological perceptions of the students and pushing them to stressful conditions. This disrupts sleep quality on one hand and on the other hand the alters in cortisol and cytokine levels. Therefore it is important to find out the possible antecedents in the extent of stress responsible for affecting sleep quality among the students. Hypotheses: 1. Cortisol level is the best predictor of poor sleep quality in the students. 2. Perceived stress level is the best predictor of poor sleep quality in students.The objective of the study was to evaluate the antecedent factors affecting sleep quality in students.
Methods: Psychological measures of stress level and sleep quality were carried out with PSS and PSQI, self administered questionnaires and simultaneously all the participating students were examined experimentally for cortisol and IL6. Data obtained were computed and analyzed for statistical significance with help of Minitab version 13.0
Results: The statistical analyses between cortisol level and poor sleep quality were significant that came out to be the best predictor for poor sleep quality in the students and confirmed hypothesis 1. Whereas correlation between psychological measures; the PSQI and PSS were non-significant that rejected hypothesis no.2.
Conclusions: Conclusively the statistical analyses revealed that increased cortisol level is the antecedent factor that plays a predictor role inducing poor sleep quality in students and leaving them in a state of jeopardy.

PP 9

VITAMIN B_{12} STATUS AND ITS IMPACT ON NEURAL FUNCTION ACROSS THE LIFE CYCLE OF HEALTHY HUMAN SUBJECTS

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Background and objectives: Vitamin B_{12} deficiency leads to a wide spectrum of hematological, neuropsychiatry and cardiovascular disorders that can often be reversed by early diagnosis & treatment. Objectives: **Study 1**: compare cardiac autonomic functions (heart rate varilability-HRV), peripheral neural activity and cognitive functions in elderly (>60 yrs) stratified by vitamin B_{12} status & following B_{12} supplementation when low B_{12} status: **Study 2**: compare HRV in children born to women with vitamin B12 deficiency during pregnancy with B12 replete pregnant women: **Study 3**:compare cardiac autonomic (using HRV), peripheral neural activity and cognitive function in B_{12} deficient and replete young adults (18-35 yrs). Objective: assess role of sensitive indices methylmalonic acid (MMA) & homocysteine (Hcy) in uncovering neural changes in young adults.
Results: Study 1:140 elderly screened; 47 healthy subjects assessed. Low frequency (LF) HRV in absolute units significantly lower in the low B_{12} group. Following supplementation, LF HRV in absolute units and total power rose significantly compared to pre-supplementation group. **Study 2**: 79 healthy children of 3-8 yrs evaluated. LF HRV in absolute units reduced significantly in children of the low B_{12} status (P=0.03) & 53 % that of the higher B_{12} status. LF and total power HRV were significant associated with cord blood B_{12} levels. **Study 3**: 34 young adults recruited. There was no difference in LF HRV when grouped based on B_{12} levels. However, in a subgroup analysis using MMA levels there was a strong negative association between MMA and LF HRV (r=-0.80, P=0.01).
Conclusions: Cardiac autonomic nervous activity is reduced in subclinical B_{12} deficient subjects across life cycle. Cardiac autonomic changes in B_{12} deficient subjects occur in the absence of peripheral neural and cognitive deficits. Plasma MMA is more strongly associated with HRV measures than plasma B_{12}. Vitamin B_{12} supplementation in elderly B_{12} deficient subjects is associated with a significant improvement in cardiac autonomic activity.

PP 10

AUTONOMIC INNERVATION AND DISTRIBUTION OF FUNCTIONAL NICOTINIC ACETYLCHOLINE RECEPTORS IN LYMPHOID TISSUES- AN IMMUNOHISTOCHEMICAL STUDY

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Background and objectives: The immune organs are supplied with an autonomic efferent (mainly sympathetic) and afferent sensory innervation and both catecholamines and acetylcholine are probably involved in neuroimmune modulation. Parasympathetic modulations such as the cholinergic anti-inflammatory response were well documented in immune tissues. Our study was conducted to show the distribution of peripheral nerves, cholinergic nerve endings and α subunits of nicotinic acetylcholine receptors (nAChRs) in lymphoid organs.
Methods: Murine and human immune tissues were processed for Hematoxylin & Eosin staining, were labeled by polyclonal anti-Neuron Specific Enolase(anti-NSE), monoclonal anti-nAChR(α1,α7 subunits), anti-Vesicular Acetylcholine Transporter(anti-VAChT) and linked to biotinylated anti-ratIgG. Labeled StreptAvidin Biotin technique was used, with DiaminoBenzedene (DAB) to detect the immunoreactivity. Staining intensity was determined based upon a score of 0 - 3+ by qualitative computerized image analysis.
Results: The α1nAChRs were distributed in the capsule, red pulps of spleen and subscapsular sinus, medullary cords & trabeculae of lymph nodes in humans. The splenic red pulp, the medullary cords and capsule of lymph nodes and thymic capsule expressed an intermediate IR of α7nAChRs in humans and Wistar rats. The IR to nAChRs observed significantly in macrophage predominant areas of immune tissues, is comparable with previous documented studies. IR of anti-NSE and anti-VAChT is localised specifically in the sites where the nAChRs are found in spleen, thymus and lymph nodes. The Peyers' patches expressed a low IR with anti- nAChRs and in liver the IR was absent for most antibodies.
Conclusions: The parasympathetic cholinergic innervation is found to be predominantly in lymph nodes and spleen through nAChRs in macrophage abundant regions of these tissues. This anatomical evidence needs further insights to prove the neuroimmune modulation, which can support the development of practical therapeutic applications.

PP 11

CHOLINERGIC NERVE CONTROL OF TURPENTINE INDUCED LOCALIZED INFLAMMATION IN BALB/C MICE

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Background and objectives: Although autonomic nerves regulate the immune system, the exact mechanism of neuroimmune modulation is not clear. While researchers described the involvement of α7nAChR in the anti-inflammatory pathway, recent evidences show that several other nicotinic receptor subunits could influence this mechanism. The nicotinic receptors in immune and inflammatory sites become the therapeutic targets for autoimmune diseases. The aim was to localize cholinergic nerve endings and α1 subunit of nicotinic acetylcholine receptors (α1nAChR) immunohistochemically in sites of local inflammation.
Methods: Localized inflammation was induced by injecting sterile turpentine subcutaneously into thighs of Balb/C mice and saline as controls. After 48hrs the skin and muscle tissues were recovered from inflammatory sites & stained by Hematoxillin & Eosin and indirect immunohistochemistry. Anti-α1nAChR and anti-Vesicular Acetylcholine Transporter (anti-VAChT) were used as primary antibodies and biotinylated anti-ratIgG as secondary antibody. Labelled streptavidin biotin (LSAB) technique was used; with diaminobenzedene to detect the immunoreactivity (IR). Intensity of immunostaining was determined based upon a score of 0 - 3+ by qualitative computerized image analysis.
Results: Macroscopically visible abscesses were found at sites of turpentine injection. H&E slides showed polymorphonuclear leukocytes (PNL) infiltration at abscess sites while it was absent in saline injected tissues. An intermediate IR for α1nAChRs was observed in PNL infiltrating peripheral zones of abscesses. IR was less for VAChT in centre and periphery of abscesses. Leukocytes found in between the muscle tissue expressed less IR of α1nAChRs, while the muscle as positive controls expressed 2+IR for both antibodies. An associated lymph node expressed IR for α1nAChRs and VAChT.
Conclusions: The presence of α1nAChRs in inflammatory cells and presence of VAChT in very close proximities confirm the cholinergic nerve control of localized inflammatory response. Several other cholinergic antibody markers are needed to be applied in the site to confirm the neuronal control of nAChRs.

PP 12

ROLE OF L-NAME AS ANTI-OXIDANT IN TRANSIENT CEREBRAL ISCHEMIA AND REPERFUSION IN RATS

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Background and objectives: The pathophysiological mechanisms leading to neuronal injury in cerebral ischaemic model are complex and multifactorial. This study examines the potential protective effect of N-nitro-L-arginine methyl ester (L-NAME) a nitric oxide inhibitor on transient focal cerebral ischaemia reperfusion in rats.
Methods: Rats were subjected to transient focal cerebral ischaemia by occlusion of the left common carotid artery (CCA) with 30 min of ischaemia followed by reperfusion for 24h. L-NAME (15 mg/kg per weight) administered 15min before arterial occlusion. By the end of experimental period quantitative assessment of malondialdehyde (MDA), Nitric oxide (NO) metabolite nitrite plus nitrate and total antioxidant capacity (TAC) in both serum and the affected cerebral hemisphere were done.
Results: As a consequent of L-NAME pretreatment, a significant improvement in behavioral and neurological outputs of ischaemic rats was observed. It successfully reduced the oxidative stress and inflammatory biomarkers, MDA and NO were significantly decreased while TAC was significantly increased ($P \leq 0.001$) in both serum and ischaemic cerebral hemisphere.
Conclusions: These data demonstrates the neuroprotective potential of L-NAME through its anti-oxidant effect in a rat model of transient focal cerebral ischaemia reperfusion.

PP13

DOES INTRAHIPPOCAMPAL INJECTION OF NALOXONE AFFECT THE SERUM CHOLESTEROL LEVEL?

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Background and objectives: The serum cholesterol level is one of the factors that increase the risk of such diseases as cardiovascular diseases and Alzheimer's disease. The opioid system influences the serum cholesterol level. The hippocampus is associated with endocrine control centers and has a high level of opioid receptors. In this study, the effect of microinjection of naloxone into the dorsal hippocampus on serum cholesterol level in adult male rats was investigated.

Methods: In this study, 40Wistar rats were used. All animals were cannulated in the dorsal hippocampus. Rats (five groups) received saline or different doses of naloxone (0.5, 1, 1.5 and 2µg/rat), intrahippocampally. After recovery, blood samples were taken and serum plasmas were separated by centrifugation, then cholesterol levels were determined by using the enzymatic method kit.

Results: The comparison of total cholesterol of the studied groups showed no significant difference between saline and naloxone 0.5µg/rat ($P>0.05$),but there was a significant difference between saline and naloxone 1 µg/rat ($P<0.05$), 1.5 µg/rat ($P<0.01$) and 2 µg/rat ($P<0.05$) groups.

Conclusions: Cholesterol is a precursor of steroid hormones.In rabbits addicted to morphine, total cholesterol, triglyceride and LDL increase significantly, possibly due to lipolytic effects of opioids.Opioid peptides cause an acute decrease in GnRH and LH levels in the bloodstream, while naloxone injection elevates LH release which causes more cholesterol consumption as theprecursor ofthis hormone.It seems that naloxoneincreased consumption of cholesterol due to the increased secretion of steroid hormones would reduce the serum cholesterol levels.

PP 14

EVALUATION OF SERUM CORTISOL LEVELS AND PLACE PREFERENCE BEHAVIOR IN RATS EXPOSED TO 0.9 GHZ RADIATIONS

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Aims and objectives: The effects of radiofrequency electromagnetic radiation (RF-EMR) exposure on serum cortisol levels and place preference were evaluated in adolescent rats.

Methods: The study was done in two stages (stage-I; cortisol estimation, stage-II; place preference task). A total of 36 male Wistar rats (6-8 weeks old) were used in each stage and were allotted into three groups having 12 in each group. Control: remained in the home cage for 28 days. Sham exposed: exposed to mobile phone in switch-off mode (no ring tone) for 28 days. RF-EMR exposed: exposed to 0.9 GHz (1 hr/day, power density-146.60µW/cm^2) from a mobile phone for 28 days. Stage-I; blood was withdrawn from animals on 0, 7, 14, 21 and 28 days and serum cortisol estimation was done using an ELISA kit (Demeditec, Germany). Stage-II; after the exposure period animals were tested on a light-dark box. A computerized image analysis system (Panlab-SMART) was used to record various parameters. Data was analyzed using ANOVA and Tukey's tests. P-value <0.05 was considered statistically significant.

Results: The serum cortisol level was significantly elevated on 7th and 28th day in RF-EMR group compared to sham & control groups. Percentage of time spent in bright chamber, number of entries to bright chamber was increased in RF-EMR group but total box entries, total distance traveled were not affected in RF-EMR group.

Conclusions: Excessive exposure to RF-EMR induced endocrine and behavioural effects in rats and it is recommended to decrease continuous and chronic exposure to RF-EMR in humans.

PP 15

COLOUR BLINDNESS AMONG MEDICAL STUDENTS OF FACULTY OF MEDICAL SCIENCES, UNIVERSITY OF SRI JAYEWARDENEPURA

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Background and objectives: Colour blindness affects a significant number of people in the world with various proportions among ethnic groups. Even though the prevalence of Colour blindness in Sri Lanka is not quantified, red green colour blindness which is the commonest type is found 2-8% of men worldwide[1]. The study was conducted to determine the prevalence of colour blindness amongst medical students, the type of colour blindness (protan, deutran, tritan) and the disability experienced among the affected individuals in Sri Jayewardenepura medical faculty.
Methods: A cross sectional descriptive study was conducted among 185 randomly selected students. Socio-demographic details were obtained using a self administered questionnaire. Colour vision was tested by using Ishihara pseudo-isochromatic plates.
The individuals detected to be colour blind were subjected to Farnsworth-Munsel 100 hue test and karyotyping to find out the exact genes affected.
Results: 185 subjects of 20 – 26 year age range were studied. 65 (35.1%) were males and 120 (64.9%) were females. One male subject was identified as colour blind (0.54%, 1.5% out of males) It was of undefined type, of moderate to severe intensity. The total error score of Farnsworth-Munsel 100 hue test was 160. Since he did not encounter any difficulty in his day to day activities, he was unaware of his disability before.
Conclusions: Prevalence of colour blindness was 0.54% among the study population and 1.5% among males. Previous studies have identified that the affected individuals encounter certain difficulties in medical practice.Therefore appropriate advice is necessary to cope with professional and daily activities to overcome the disability after screening at the beginning of the career.

PP 16

SURVEY OF PUBLIC AWARENESS, UNDERSTANDING AND ATTITUDES TOWARD EPILEPSY IN COLOMBO,SRI LANKA.

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Background and objectives: The awareness, understanding, and attitudes toward epilepsy in 1,015 men and women were surveyed in Colombo, Sri Lanka.
Methods: A face-to-face questionnaire interview survey. Subjects with epilepsy or with relatives who had epilepsy were excluded.
Results: Of all,94.5% had read or heard about epilepsy, 21.6% knew someone who had epilepsy, 27.9% had witnessed epileptic seizure, 36.2% believed that epilepsy is a type of mental retardation,9.8% believed it is a type of insanity, 97.7% considered epilepsy as a brain disorder, 72.1% would object to having their children associated with persons with epilepsy,82.1% would put an object into a patient's mouth during an epileptic seizure,65.4% believed that epileptic persons should not be employed in jobs as other persons are, 88.2% would object to having their children marry a person with epilepsy, 41.3% agreed that persons with epilepsy could be married , 27.6% would not let their children play with others with epilepsy , 33.9% did not know the cause of epilepsy,25.6% did not know what an epileptic attack was like, and 59.7% did not know what to recommend if their friends or relatives had epilepsy. Of all, 43.2% considered epilepsy as a curable disease while 77.3% believed that the risk of inheriting it is very high.
Conclusions: I suggest that more effort be made to improve public awareness of, attitude toward, and understanding of epilepsy through education.

PP 17

CORRELATION OF SERUM AND PERICARDIAL FLUID AMINO TERMINAL PRO-B TYPE NATRIURETIC PEPTIDE.

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Background and objectives: Serum levels of BNP (B-type natriuretic peptide) and NT-proBNP (amino terminal pro-B-type natriuretic peptide) have been found to be well correlated with cardiac dysfunction. However, how good serum NT-proBNP is related to the pericardial fluid is not known. The purpose of this study was to investigate the correlation of serum and pericardial fluid NT-proBNP levels in patients during coronary artery bypass grafting (CABG).

Methods: A cross-sectional study was done on 50 patients, undergoing CABG. Both the samples of serum and pericardial fluid were collected during CABG and NT-proBNP levels were assessed by an electrochemiluminescence immunoassay. The log transformation of NT-proBNP concentrations was done. We investigated the correlation of the pericardial fluid and serum levels of log NT-proBNP.

Results: Pericardial fluid log NT-proBNP was estimated to be 2.7Â±054pg/ml in contrast to a serum level of 2.2Â±0.6pg/mil in 50 CABG patients. It was found that pericardial fluid NT-proBNP levels were significantly correlated with its serum levels with an r value of 0.85 and a p-value of < 0.0001. The pericardial fluid- serum ratio has been estimated to be 1.25.

Conclusions: Since serum NT-proBNP levels have significant correlation with its pericardial fluid levels in patients undergoing CABG, the serum levels can be used to guage both cardiac function as well as the pericardial fluid level using pericardial fluid -serum ratio.

PP 18

PERICARDIAL FLUID AND SERUM NT-PRO-BNP IN HEART FAILURE

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BNP levels in the pericardial fluid and serum have been shown to be correlated with LV dysfunction (Tanaka et al 1998). The current study was aimed to measure pericardial fluid and serum NT-pro-BNP during CABG for assessment of cardiac function status during and after surgery. 50 consecutive patients undergoing CABG were included in this study. LV functions variables were assessed using Echocardiography. The samples of the pericardial fluid [PCF] and serum were collected during CABG immediately before the pericardium incision. NT-pro-BNP levels were assessed by electrochemiluminescence immunoassay. Both PCF and serum NT pro BNP levels in pg/ml were plotted against each other as well as against cardiac function variables: EF, EDVI and ESVI to study the cardiac peptide responses of ejection fraction. ROC curves were used to check the discriminatory power of NT-pro-BNP. Results are presented as mean +/- SD for compensated, systolic and diastolic heart failure.

	Cases EF	EDVI	ESVI	PCF	Serum n
	%	ml/m2	ml/m2	pg/ml	pg/ml
CHF	62+/-7	46 +/-9	20+/-3	570+/-720	122+/-132 18
SHF	42+/-6	83+/-21	52+/-18	3699+/-3457	1200+/-978 19
DHF	60+/-5	34+/-3	16+/-2.5	125+/-95	57+/-42 07

Important observations from this study are: 1.Both increased pericardial and serum NT-pro-BNP levels identified CABG patients with systolic heart failure.2. NT-pro-BNP levels were within normal range in CABG patients with compensated as well as diastolic heart failure.3.The log plot of PCF and serum NT-pro-BNP showed a good correlation.4. ROC curves showed similar performance of NT-pro-BNP levels both in PCF and serum to discriminate left ventricular systolic dysfunction.5.PCF NT-pro-BNP was regularly higher than serum.

Conclusion: Pericardial fluid and serum NT-pro-BNP can both equally predict systolic heart failure.

PP 19

RESPONSES OF CHEST PAIN AND DYSPNOEA TO INCREASE IN HEART RATE IN PATIENTS WITH CORONARY HEART DISEASE USING EXERCISE TOLERANCE TEST (ETT)

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Background and objectives: To observe the relationship between chest pain/dyspnea-heart rate during exertion in patients with Coronary artery disease compared to patients having negative ETT and to compare the chest pain score with angiography results in patients with CAD in a private and public sector hospital.
Methods: This is a cross sectional study in which 150 male patients referred for ETT at Ziauddin University hospital, Clifton campus and National institute of Cardiovascular diseases Karachi were included. Fourteen were excluded from the study as they had Myocardial infarction. All patients performed a maximal progressive exercise on Bruce protocol. Age, BMI, target heart rate and risk factors of Coronary artery disease were noted for each patient. The resting heart rate and resting systolic BP was noted. The maximum systolic BP, maximum heart rate, total exercise time and METS were recorded at the end of exercise. The chest pain and dyspnea score were plotted against maximum heart rate.
Results: Out of 136, 51 were ETT positive and 76 were ETT negative. The patients in ETT positive group were older in age, had lesser maximal heart rate, lesser total exercise time and lesser METS than ETT negative. Out of 51 ETT positive patients, 20 had chronotropic incompetence.
Conclusions: In patients having positive ETT and referred for angiography, the chest pain-heart rate relationship correlated well with number of vessel disease. The onset of dyspnea was earlier in ETT positive group than in ETT negative group.

PP 20

EFFECT OF YOGA ON HEART RATE VARIABILITY IN PERIMENOPAUSAL WOMEN

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Background and objectives: To investigate whether yogic intervention can be a cardioprotective measure in perimenopausal women.
Methods: The study was conducted on 20 perimenopausal women. They were randomized into control (n=10, age 46±5.09) and yoga (n=10, age 44±2.64) groups. Subjects suffering from any diseases or taking any drugs were excluded from the study. Yoga group practiced yoga for 30 min/day for a month. Control group did not do yoga or any relaxation or any type of active exercise. Short-term heart rate variability was recorded in all subjects at zero-month and one month. The data were compared between the groups.
Results: Both the groups were comparable in term of their age, height, weight, BMI, systolic BP, diastolic BP, heart rate, and respiratory rate. Time domain measures of HRV, which are primarily markers of cardiac parasympathetic activity [SDNN: 23.93(18.5-35.4) vs 43.2(34.4-50.1), p=0.014; rMSSD: 17.3(12.45-21.85) vs 30.6(25.15-38.05), p=0.022; NN50: 1(0.25-8.5) vs 34(11-60.5), p=0.022] were increased in yoga group as compared to control group after yogic practices. High frequency power, which is also one of the markers of parasympathetic activity, was increased in yoga group as compared to control group.
Conclusions: Parasympathetic activity increased in perimenopausal women after one month of yogic practices as compared to non-practicing control group. This increase in parasympathetic activity indicates that yoga can be a cardioprotective adjuvant therapeutic measure in peri-menopausal women.

PP 21

EFFECT OF ANAEMIA ON HEART RATE VARIABILITY IN MEDICAL STUDENTS

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Background and objectives: To assess the haemoglobin and iron status in medical students and effect of anaemia on cardiovascular autonomic regulation assessed by heart rate variability (HRV). The prevalence rate of anaemia in reproductive aged women was high; considering the fact that female medical students are under stress, loss of iron in menstrual cycles and their dietary pattern, can result in anaemia; which is ignored in them.
From the reviews it is also evident that anaemia affects cardiovascular autonomic functions. There are no such studies done in our population investigating anaemia and cardiovascular autonomic functions. Thus it is worth exploring the effect of iron deficiency anaemia.
Methods: The cross-sectional comparative study was conducted on 40 unmarried female medical students of age 18-30 years. They were divided into two groups based on their hemoglobin (Hb) level: nomal Hb group (Hb≥12g/dl) and anaemic group (Hb≤10g/dl).Their Mean Corpuscular Volume, RBC count and ferritin levels were measured. Short-term heart rate variability and cardio-respiratory variables were recorded in all subjects after 15 min of rest and compared between the groups. The relationship between HRV and blood parameters was studied using Spearman's Rank correlation. Mann Whitney U test was applied to compare the variables of blood and HRV.
Results: Both groups were comparable in terms of their age, BMI, diastolic blood pressure. However, systolic blood pressure [98(90.52-108.3) vs. 110(108.5-113) mmHg, p=0.005] and respiratory rate were lower in anaemic group. The RBC count, MCV, and ferritin levels{[3.7(3.52-3.97) vs. 4.25(4.16-4.38)], [78.09(77.5-82.22) vs. 90.06(86.17-92.53)] and [9.7(7.25-18.55) vs. 33.85(16.9-44.95)] }ng/mL, p=0.001] were lower in anaemic group. However, there were no statistical significant differences in HRV parameters between the groups, and no significant correlations were obtained between HRV and blood parameters.
Conclusions: Female medical students with anaemia had lower systolic BP and respiratory rate than female medical students with normal hemoglobin level. However, there were no significant differences in HRV parameters between the groups. It indicates that anaemia may not have effect on cardiac autonomic modulation in this age group of female.

PP 22

HEART RATE CHANGES DURING DIFFERENT PHASES OF MENSTRUAL CYCLE

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Background and objectives: Autonomic changes occur during different phases of the menstrual cycle but available reports are conflicting. Autonomic function tests do not give direct measure of autonomic activity but can indicate overall dysfunction of autonomic nervous system. The aim of this research work was to study heart rate changes during different phases of normal menstrual cycle.
Methods: 30 female students of age 18–25 years studying in J.S.S. Medical and Dental College and Hospital, Mysore, with history of regular menstrual cycles were chosen for this study. After consent and ethical approval, heart rate changes were recorded using ECG in the mornings on specified days of menstrual cycle during its three phases - menstrual, follicular and luteal. The different autonomic functions tested were heart rate changes at rest, Expiration-Inspiration ratio, 30:15 ratio, S/L ratio and Valsalva ratio. Data was represented as Mean ± standard deviation (SD). Analysis was done using Microsoft Excel and pooled *t* test. P value <0.05 was considered statistically significant.
Results: The resting heart rate difference between menstrual and luteal, and between follicular and luteal was not statistically significant. There was no statistically significant difference of 30:15 ratio, E-I ratio, S/L ratio and Valsalva ratio between the 3 phases of menstrual cycle (P>0.05).
Conclusions: Despite the limitation of being noninvasive technique, the present study provides a quantitative evaluation of sympatho vagal interaction modulating the cardiovascular function which maybe clinically useful.

PP 23

STUDY OF LIPID PROFILE & HAEMODYNAMIC VARIATIONS DURING STRESS IN MEDICAL STUDENTS

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Background and objectives: Increased cholesterol in blood plays the role in atherosclerosis formation. It is observed that stress increases cholesterol level. Most of previous studies were conducted on biological risk factors like blood lipids under stress in middle aged persons who remained under investigation for heart problems. The study was conducted to evaluate the changes in blood lipids and blood cortisol along with sympatho-adnergic responses determined by selected haemodynamic parameters during psychological stress.
Methods: Medical students (n= 200) were randomly selected. They were examined two times, for stress task of viva- voce (degree examination) and during non-stress period. Final selection of participants was depending on stress assessment and their well being.
Results: Cortisol, systolic and diastolic blood pressure (SBP and DBP) and heart rate (HR) were significantly increased during stress period with $p<0.001$ for each parameter. But different blood lipids levels (TC, LDL-C, HDL-C and TG) were detected with different significant levels. The correlations of changed lipids with raised findings of haemodynamics and cortisol were also evaluated.
Conclusions: Further studies in our population are needed to evaluate the relation of changes in various biological risk factors including IL-9 and sympatho-adernergic activates with stress factors related to our social or environmental problems, especially genetically based psychological factors.

PP 24

THE RELATIONSHIP OF TNF-A WITH MOTOR DYSFUNCTION IN HYPERTENSIVE PATIENTS

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Background and objectives: The brain is one of the organs frequently affected in hypertension. High blood pressure stimulates endothelial inflammation and plays a role in atherosclerosis formation that leads to cerebrovascular disorders. Brain hypoxia and ischaemia in hypertension decrease autonomic regulation of blood flow, and cause motor function disorder. This study was designed to determine the relationship between TNF- α with motor dysfunction in hypertension.
Methods: The subjects were hypertensive outpatients (198) with movement disorder symptoms. Examination of motor function was performed using the Purdue pegboard test and TNF- α was examined by ELISA.
Results: The first group consisted of 132 subjects (66,66%) with hypertension and the second group was 66 (34%) with normotension. Motor dysfunction was found in 88 patients (66,70%) of the first group and 11 (16.7) of the second group. There was statistically significant difference ($p<0.005$) between motor dysfunction in the first and the second group, and correlated with hypertension. Low concentration TNF-α was found in 122 (61.60%) and high in 76 (48.5%) subjects. Motor dysfunction was found in 61 (50%) subjects from the low concentration TNF- α, and in 38 (50%) subjects from the high concentration TNF- α. There was no statistically significant relationship found between concentration of TNF- α with motor dysfunction ($p>0.005$).
Conclusions: No relationship was found between levels of TNF- α with motor dysfunction in hypertension. Motor dysfunction was significantly correlated with hypertension.

PP 25

KNOWLEDGE REGARDING HYPERTENSION IN HYPERTENSIVE PATIENTS ATTENDING A CLINIC AT COLOMBO SOUTH TEACHING HOSPITAL, SRI LANKA

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Background and objectives: Hypertension is a global non-communicable disease. The prevalence of hypertension has increased rapidly in Sri Lanka and is a significant cause of morbidity. The objective was to assess the knowledge level of hypertensive patients regarding what are hypertension risk factors for hypertension management and complications of hypertension.
Methods: The study was a cross sectional descriptive study. A total of 200 male and female hypertensive patients attending a hypertension clinic at the Colombo South Teaching Hospital were included in the study. The Hypertension (HTN) knowledge component had 10 questions. The HTN knowledge test assessed respondents knowledge in defining HTN risk factors for hypertension management and complications of hypertension. Data was analyzed by using descriptive and analytic statistics.
Results: Younger age group (30-61 years) had a better knowledge score regarding hypertension compared to the older age group (62-77 years) ($p< 0.05$). A higher percentage of females (22.6%) had a poor hypertension knowledge score compared to males (9%) ($p< 0.05$). Those with low educational levels (grade 5 to O/L) had a poor knowledge score regarding hypertension compared to those with higher educational level (A/L or higher) ($p< 0.05$).
Conclusions: These results suggest that although general knowledge of HTN is adequate, patients do not have a comprehensive understanding of this condition. Efforts to educate the public that lifestyle modifications can prevent hypertension and that that it usually causes no symptoms need to continue. It is important to develop messages that reach elders and people with less education.

PP 26

STUDENT PERCEPTION ON USEFULNESS OF TEACHING METHODS ADOPTED BY THE DEPARTMENT OF PHYSIOLOGY, FACULTY OF MEDICINE, UNIVERSITY OF COLOMBO TOWARDS LEARNING OF PHYSIOLOGY

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Background and objectives: This study was planned to determine the perception of students on usefulness of teaching methods used towards learning of physiology.
Methods: Student perception on different teaching methods used by the department in first and second terms of basic sciences stream was obtained from the AL/2010 batch of medical students (n=200) using a feedback form. These teaching methods include lectures, practical and small group discussions, CD sessions and formative assessments. Key given to students to indicate their perception (response) was; 1- Very poor, 2- Poor, 3- Average, 4- Good and 5-Excellent.
Results: Response rate was 88% (n=176). In the first term an average of 64 6% students has considered that lectures have been useful (responses 4 and 5) except for three topics. Response for these three topics was less than 50%. All the second term lectures have been considered as useful by majority of students (85.8%). Following teaching activities in first term have been regarded as useful by majority; practicals 88.1%, tutorials and small group discussions 79. 2%, formative assessments 74.1%, while in second term averages has been 80.3%, 73.6% and 78.3% respectively. An average of 72.6% in first term and 70.6% in second term considered content coverage of interactive CD sessions as being adequate (responses 4 and 5).
Conclusions: These results show that majority of students have perceived teaching activities as useful towards learning of physiology but it is yet to be determined whether this is reflected in their academic performance.

PP 27

PLACE OF MULTIPLE CHOICE QUESTIONS (MCQS) AS AN EFFECTIVE STUDY TOOL FOR LONG-TERM RECALL

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Background and objectives: Giving feedback and discussing MCQs, while allowing students to mark their answers on their own, could be a vital study tool in medical education. The objective of the study was to examine the effectiveness of MCQs as a study tool for long-term recall
Methods: A MCQ paper consisting of 10 MCQs (50 statements) was given to the first year medical students, Medical Faculty, Colombo, to answer within 30minutes. The test was conducted soon after completion of respective areas in physiology. Correct answers were discussed and students were advised to mark their answer scripts by themselves, giving negative marks for each incorrect answer. Six weeks later the same MCQs were repeated without a prior notice while they were studying different areas in physiology and the same procedure was carried out. Data was analyzed using SPSS (v.13).
Results: Students who participated in both the occasions were selected for analysis (n=82). A significant increase in the response rate was observed in the second attempt (43.02±4.58; First attempt=39.1±6.23; $p<0.001$), with 82.9% attempting more than 40 statements compared to the first (46.3%). The average mark obtained by the group increased significantly at the second attempt (66.63%) compared to the first (52.56%; $p<0.001$). 81.7% students have scored higher marks than the first time. In both attempts the average mark obtained increased with the number of MCQs answered despite negative marking (first attempt- 20-29 answered=42.67%; 30-39 answered= 45.55%; 40-50 answered=61.42%). Accuracy of marking increased from 61% at the first attempt to 78% at the second attempt.
Conclusions: The study suggests a very positive long- term recall effect of MCQs when administered properly as a study tool.

PP 28

MERITS AND DEMERITS OF 'FREQUENT DISCUSSION EMBEDDED LECTURE' IN LEARNING PHYSIOLOGY: STUDENTS' OPINION

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Background and objectives: To assess students' opinion about merits and demerits of 'frequent discussion embedded lecture (FDEL)' in learning physiology.
Methods: This cross-sectional descriptive study was conducted in the Department of Physiology, Noakhali Medical College, Bangladesh during the period of March-June'12. By convenient sampling 107 students who attended FDEL lecture in physiology were enrolled in the study. FDEL is a new method of lecturing in which teachers delivers lecture for 15-20 minutes followed by a break for 5-10 minute with discussion among students and the teacher and 2-3 such sessions in one class. The participants were requested to choose statement about the merits and demerits of FDEL given in a close ended questionnaire. Permission of the head of the institute and consent of the participants were taken. Data was analyzed by making tally and by a calculator.
Results: Ninety-three percent students thought FDEL a good learning system. The students who chose statements regarding the merits of the system were as follows; 'students get opportunity to understand the topic clearly' (94.39%), 'students can discuss among them about the topic' (85.98%), 'students can ask question from the teacher before forgotten the critical part, (90.65%), 'students do not feel tired'(54.21%). The students who chose the demerits was as follows; 'students attention towards teacher become interrupted' (16.82%), 'students engage in gossiping and chatting' (55.14%), 'it kills time' (19.63%), 'teacher may lose attention and time' (31.78%).
Conclusions: In spite of having few demerits FDEL was supported by majority of the participants for its several merits.

PP 29

CASE BASED TEACHING AND ITS OUTCOMES TOWARDS CHANGE IN STUDY HABITS AND LEARNING ATTITUDE IN STUDENTS OF 2ND YEAR MBBS

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Background and objectives: Physiology is a distinguished scientific discipline for understanding the pathology and medicine thoroughly. This study was planned to find out the effect of case based teaching towards improving knowledge, satisfaction, study habits and positive learning attitude in 2nd year MBBS students of Ziauddin Medical College.
Methods: One hundred and ten second year medical students were included in this study. Their baseline learning attitude and study habits were measured by questionnaires. The reticuloendothelial system, CVS, endocrine and respiratory system were taught in two semesters of their second year course. All the modules were mostly based on case-based teaching in which the clinical cases were given. Students solved that problem by consulting various learning resources and group discussion. After that a formal session was organized with a facilitator who further discussed these problems and corrected the physiological concepts. The change in learning attitude and study habits were again measured at the end of semester I and II.
Results: Of the 110 participants 88 (80%) completed the questionnaires at baseline a significant improvement was seen 65 (59 09%) at the end of 1st semester and 74 (67 27%) at the end of 2nd semester respectively in knowledge satisfaction study habits and learning attitude in students at the base line and at the end of 1st and 2nd semester.
Conclusions: The case based teaching is very helpful towards positive change in study habits and learning attitude of medical students for understanding the concepts and may be considered to replace the conventional method in the near future.

PP 30

RELEVANCE OF CLINICAL EXPOSURE IN TEACHING OF PHYSIOLOGY

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Background and objectives: The study was conducted in order to design an innovative method to aid better comprehension of Physiology and to study the effect of the same in academic performance.
Methods: 50 students were randomly divided into group A who were exposed to clinical cases pertaining to applied cardiovascular system and no exposure clinical exposure pertaining to applied central nervous system and Group B was who were exposed to clinical cases pertaining to central nervous system but had no clinical exposure regarding cardiovascular system. Both groups attempted the same tests both written and viva voce on the relevant topics. The same topics were revised with relevant clinical exposure to both groups together and asked to answer a second set of tests written and viva voce on the same topics.
Results: Group A fared better in first set of tests in cardiovascular physiology both in written as well as viva voce than group B, whereas group B fared better in tests in central nervous system than group A. There was no significant difference observed in the results of second set of tests answered by both the groups.
Conclusions: Clinical exposure in related topics helped in clear and long lasting understanding of Physiology as reflected in their academic performance.

PP 31

ELECTRONIC STETHOSCOPE FOR STUDENT USE

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Background and objectives: Undergraduate teaching of cardiovascular physiology often involves lectures on heart sounds. It is however interesting for the students to see the recording and play back of heart sounds during the lecture. Described below is a simple electronic stethoscope that can be used for performing such recordings.
Methods: The electronic stethoscope was constructed by connecting a condenser microphone with a 3.5 mm stereo plug to the chest piece of an ordinary stethoscope using medical grade tubing. Heart sounds or Korotkoff sounds were recorded using Thinklabs phonocardiography software by connecting the stereo plug of the microphone to the microphone input jack of a laptop (Microsoft XP/Mac OS or later).
Results: Recording and play back of heart sounds with the above electronic stethoscope was demonstrated to sixty undergraduate medical students during a lecture on heart sounds. Recording of Korotkoff sounds and heart sounds was also demonstrated in a laboratory session for students undergoing the M.Tech clinical engineering course. In both cases the students were keenly interested in the recordings. The making of this stethoscope was also given as an assignment to M. Tech clinical engineering students, who were able to construct this quite easily.
Conclusions: This electronic stethoscope is simple to construct and can be used to record heart sounds, Korotkoff sounds, lung sounds and sounds from the joints. This electronic stethoscope is useful for familiarizing the students with the nature of Korotkoff sounds prior to practical sessions on recording of blood pressure.

PP 32

COMPARISON OF LEADERSHIP SKILLS WITH KNOWLEDGE AND ATTITUDES ON LEADERSHIP AMONG STUDENTS IN MEDICINE

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Background and objectives: To identify skills, knowledge and attitudes on leadership among medical students. With increased public interest to see doctors take on more significant leadership roles, it is essential to develop strong leadership skills through medical education.
Methods: Self Survey of the Authentic Leadership Questionnaire (ALQ) and a formulated questionnaire based on Medical Leadership Competency Framework (MLCF) was distributed among 200 first year students of Faculty of Medicine, Colombo. Two sub-populations were created based on the average score for the ALQ (each of the items rated from 1- 4); those with a score of < 3(poor skills) and ≥3 (good skills). Attitudes and knowledge of the 2 groups were compared using the formulated questionnaire under 5 subtopics; a score of 4 or more indicating good knowledge.
Results: Of the students who fully completed ALQ (n=109), 74.3 % had low authentic leadership skills (mean 2.59± 0.26). Calculated separately, average values for each component of the formulated questionnaire (MLCF) was >4 (personal qualities; n=140; 4.30±0.46, working with others; n=144; 4.35±0.52, managing services; n=143; 4.30± 0.55, improving services; n=143; 4.02±0.59, setting directions; n=144; 4.30±0.57). Both sub- populations (<3; n= 28; 2.59±0.26, ≥3; n=81; 3.25±0.18) gave an average rating of ≥4 for all components of the formulated questionnaire (MLCF). 82.9% indicated they would benefit from leadership training.
Conclusions: Despite majority having low leadership skills, both groups have adequate knowledge and attitudes on what is expected of medical personnel as leaders. The discrepancy needs to be addressed during the medical curriculum.

PP 33

RATER AND SELF ASSESSMENT OF LEADERSHIP SKILLS AMONG FIRST YEAR MEDICAL STUDENTS USING THE AUTHENTIC LEADERSHIP QUESTIONNAIRE

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Background and objectives: It is essential to develop strong leadership skills through the medical curriculum to enable Medical graduates to become future leaders. The objective was to assess leadership skills among medical students and their immediate leaders.
Methods: Self and Rater versions of the Authentic Leadership Questionnaire (ALQ) was distributed among 200 first year students of Faculty of Medicine, Colombo. The score calculated for each of the 4 components of the ALQ is the average of the score from 1 to 4 given to its items. An average of 3 or more for each component is compatible with good leadership skills. Each component was analysed separately using descriptive and comparative statistics using SPSS (v13).
Results: The overall assessment of leadership skills of the participants in all 4 components was <3. (Transparency;n=146;2.82±0.44;Ethicalskills;n=123;2.51±0.51,Balancedprocessing;n=115;2.90±0.06;Self awareness ;n=131;2.83±0.51). The skills of the leaders in all the components were significantly higher than self ($p<0.001$; Transparency; 3.31±0.44; Ethical skills; 2.94±0.56, Balanced processing; 3.17±0.05; Self awareness; 3.20±0.56). The females demonstrated significantly lower ethical skills (2.36±0.52) than males (2.71±0.46;$p= 0.02$). 85.4% rated themselves as good or average leaders and 76.3% rated their leaders as very good or excellent.
Conclusions: Majority of students have poor leadership skills and a discrepancy exists between their actual skills and how they view themselves as leaders. Females have lower ethical skills than males. The immediate leaders have been rated to have significantly higher leadership skills than self. It is important to determine contributing factors for poor leadership skills in this group and address them during their training to improve their leadership skills.

PP 34

MEDITATION-ITS ROLE IN ENHANCEMENT OF ACADEMIC PERFORMANCE (IN PHYSIOLOGY)

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Background and objectives: The pilot study was conducted with the aim of establishing the effect of meditation in enhancement of the academic performance in the medical undergraduates in the Department of Physiology, NEIGRIHMS.
Methods: 50 healthy young adult students of First yr MBBS were included in the study. The students were divided into under achievers (12), low achievers (15), average achievers (8), and high achievers (5) based on the result of a number objective type of class tests. Exposure to regular sessions of guided mindful meditation for period of six weeks was followed by similar tests and the scores were compared and analysed.
Results: Marked improvement in scores was recorded in the underachievers and significant number of them moved to the high achiever group followed by the low achievers, average achievers and the high achievers. Degree of improvement correlated positively with the attendance in the meditation sessions. More than 70% of the students reported effective time management and improvement in clarity, concentration and attention.
Conclusions: Meditation is a perfect motivational tool to help the medical students improve their academic performance, which also serves well as an effective stress coping mechanism. Incorporation of practical meditation sessions in the medical curriculum in the Preclinical and Paraclinical years is an idea to ponder on.

PP 35

NURSING STUDENTS EXPERIENCE OF OSPE IN THE MALDIVES NATIONAL UNIVESRITY

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Background and objectives: Aim of the research is to explore experience of students doing OSPE as an assessment method of the subject of Anatomy and Physiology taught in diploma and degree nursing programs. The objectives of the research were: to explore the effectiveness of the faculty in getting students ready; Identify the method of studying that best prepared students; Compare expected marks and actual marks; Identify ways for improvement.
Methods: A self-administered questionnaire consisting of demographic questions and questions related to OSPE were distributed to students who did OSPE.
Results: Data was collected from 54 students: 64.91% stated that they got adequate time to prepare for exams. Regarding effectiveness of faculty – lectures 35.19%, and tutorials 40.74% did not state whether effective or not. Self study activities, 38.89% helpful. Students (85.96%) agreed that they were provided enough instruction on how to do OSPE. Most of the students (48.15%) stated that the exam was easy, and 31.58% believed that they will get a score of 75-84, which does not correlate with actual marks. Most of the students used group study (54.39%).
Conclusions: Adequate time was provided for students to practice and prepare for the exam. The lectures and tutorials did not provide adequate help for students to prepare for the exam. Faculty need to ensure that the lectures and tutorials are structured in such a way to provide more help for the students.

PP 36

FUTURE OF MEDICAL EDUCATION IN PAKISTAN

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Background and objectives: To foster and implement the best system of medical education to fulfill the needs of the community of 21st century in Pakistan. The basic sciences education (BSE) prepares the physicians, medical graduates and practitioners for lifelong learning; it provides a conceptual frame work to acquire and organize new information. The bedside diagnostic skills also depend on the foundational basic science knowledge. The current proposed changes in the structure of pre-clinical curriculum threaten the quality of medical education in Pakistan.
Methods: Currently, the traditional system is invoked in most of the public sector medical institutions. Nevertheless, problem based learning (PBL), Community Oriented Medical Education (COME), and semester system are also being experimented in private sector in the face of acute dearth of adequately trained medical teachers.
Results: The alternate systems were tried in some leading and oldest institutions of Pakistan and proved unsuccessful. The focus on basic science education has become fuzzy and ill-defined to the detriment of medical education.
Conclusions: It appears mandatory to develop a system comprising of most modern tools rippled with traditional system and putting it into operation uniformly both in the Public and private sector. Clicking to a single tool like PBL shall prove lethal for the progressively deteriorating basic sciences in Pakistan.

PP 37

Effect of Stress on Fasting Blood Glucose Level, Blood Pressure and Anthropometric Parameters among the Working and Non-working Women: A Comparative Study

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Background and objectives: Stress has been defined as a nonspecific adaptive response of the body to any demand and also to an internal and external stimulus. Today's working women have many problems involving family and professional lives. This study was designed to compare the levels of stress, anthropometric parameters, blood pressure and fasting blood glucose levels in a sample of working and non-working women.
Methods: ***Sample*:** 100 women belonging to Mangalore City between of 25-35 years participated (50 from working class and 50 from non-working class). Non-smokers with no history of diabetes or hypertension, not on any prescribed medication were included. ***Interview Schedule:*** A pre-tested questionnaire that measured the psychological, environmental, and physiological aspects of stress was used for assessment of stress. ***Anthropometric Parameters*:** Weight, height, body mass index (BMI) and waist- hip ratio was measured. Blood pressure was noted. Fasting blood glucose levels was assessed by Glucose-Oxidase-Peroxidase method. ***Analysis of data*:** The stress levels were quantified with statistical scoring techniques. Chi-square test was applied for determining the associations. Student's unpaired t-test was used for comparison.
Results: There were significant differences in the two classes of participants. i.e. the working respondents (mean score 0.73) were found to be more affected by the psychological stressors as compared to the non-working respondents (mean score 0.68). Working respondents experienced more physical stress (mean score 1.04) than non-working respondents (0.91). FBS was highly significant ($P < 0.001$) in the working class in comparison to the non-working class. No significant differences were noted in the body weight, Body Mass index (BMI), waist –hip ratio and blood-pressure.
Conclusions: Working women when compared with the non-working, experienced more physiological and psychological stressors andincrease in FBS which could be attributed to the stress and anxiety they undergo at their working environment thereby increasing their susceptibility to develop type II Diabetes Mellitus in the coming future.

PP 38

MECHANISMS OF THERMOREGULATION IN ASIAN ELEPHANTS (ELEPHAS MAXIMUS MAXIMUS)

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Background and objectives: Many controversies exist regarding thermoregulation of Asian elephants. In the present study we conducted a series of experiments to study the thermoregulatory mechanisms of elephants in more detail.
Methods: To study mechanisms of thermoregulation body temperature measurements were taken in 13 domesticated elephants aged 12 – 65 years (rectal/ear/flank/ventral body wall) at half hourly intervals from 8 to 15 hour using an electronic thermometer that had several thermocouples. Cutaneous evaporation rates (dorsal flank region and lateral ear pinna) were measured in 17 elephants aged 03 – 65 years using cobalt chloride impregnated chromatographic discs. Similar measurements on body temperature were also done when elephants were walking along a hot tarred road (n=6) and when they were wallowing in water (n=6).
Results: Rectal temperature remained stable at 37.1^{0}C throughout the day despite varying climatic conditions. However, there was a significant increase in the skin temperatures over time; flank (27.3^{0}C to 39^{0}C) and ear (26.6^{0}C to 37.5^{0}C). Decrease of rectal temperature (0.25^{0}C) was observed during wallowing with concurrent reduction in skin temperatures. Significantly higher cutaneous evaporation rates were observed in young elephants (409g/m2/h) when compared to older animals (55g/m2/h).
Conclusions: We conclude that the skin may be acting as a thermal barrier in these animals. It is possible that existence of age dependent variability of cutaneous evaporation allows young elephant to withstand hot humid environment in tropics but make them vulnerable to dehydration.

PP 39

AN EXPERIMENTAL STUDY OF THERMAL VARIATION IN DIFFERENT TEMPERAMENTS

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Background and objectives: To evaluate whether the skin temperatures of different temperament are the same or there is any variation and deride from the physiology normal range or any specific difference appear within the normal pattern.
Methods: For study only male volunteers were selected randomly between the age group 20-40 years. The study was carried out on 120 male volunteers. Temperature measurement was done by thermo-couple sensors attached to a Digital Micro Voltmeter.
Results: So we found that oral temperature of different timings in three temperament results are more than 95% significant.
Conclusions: From the findings of this study it may be concluded that individuals having bilious temperament have a higher level of body temperature. Phlegmatic temperament individuals had the lowest level of normal body temperature. Sanguine temperament individuals had temperatures in between phlegmatic and bilious temperament. This relationship can be established between temperament and thermal variation which validates that bilious individuals are hotter in touch than phlegmatic temperament individual and sanguine individuals are hotter than phlegmatic but not more than bilious.

PP 40

FOLIC ACID-FUNCTIONALIZED SILVER NANOPARTICLES CAN INDUCE APOPTOSIS IN LEUKEMIC MYELOBLASTS WITH AND WITHOUT MICROWAVE

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Background and objectives: Nanoparticles of silver can be functionalized with active biologic moieties like antibodies, drugs and chemicals, enabling them to react with specific cells. Folate receptor shows increased expression on neoplastic myeloid cells, which may be helpful for detection and apoptosis induction in those cells. Microwave alone induces some apoptosis. We aimed at evaluating effects of folic acid-functionalized silver nanoparticles on cancer cells from 4 patients with acute myeloid leukemia (AML), by measuring the rate of cell cytotoxicity by nanoparticles with and without use of microwave.
Methods: Blood samples from 4 patients with known AML (M1, M2, M3 and M4 subtypes) were taken before initiation of any treatment. Separated neoplastic cells were incubated with folic acid-functionalized silver nanoparticles with and without microwave, and MTT assay was used for detection of cytotoxicity. Paired t-test was used to compare the percent of apoptosis induction in them.
Results: Apoptosis induction percentages in cancerous cells in the 4 groups of cells were 60.7, 62.1, 90 and 61.6 with microwave, and 57.8, 58.2, 61.7 and 53.8 without microwave. Significant ($p<0.05$) differences from control groups (cells with only microwave, cells with only nanoparticles, and cells without any treatment) were seen.
Conclusions: The different rates of cytotoxic effect among these 4 types of neoplastic cells may be due to difference in number of folic acid receptors in them. Hyperthermia by microwave can enhance the anticancer effects of silver nanoparticles.

PP 41

A COMPARATIVE CYTOGENETIC ANALYSIS OF SPONTANEOUS MISCARRIAGES COUPLES THROUGH QF-PCR (QUANTITATIVE FLUORESCENT PCR) WITH SHORT TANDEM REPEAT MARKERS AND CONVENTIONAL CYTOGENETIC TOOLS.

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A number of studies have shown that Quantitative Fluorescent Polymerase Chain Reaction (QF-PCR) can be considered as a complementary and reliable tool for cytogenetic studies of spontaneous miscarriages. There are several advantages of this technique. (i) It provides results in those cases in which cytogenetic diagnosis is unsuccessful, (ii) It allows the diagnosis of >80% of chromosomal anomalies commonly found in pregnancy losses, (iii) Regardless of the deterioration of the sample, the percentage of success using QF-PCR is higher than Karyotyping, (iv) It permits determination of the fetal origin of the sample and allows us to discount maternal contamination, (v) Parental and meiotic origin of aneuploidy can both be determined, (vi) It is a rapid technique, which can take, 48 h from the collection of the sample to the time a diagnosis is established, (vii) A large number of samples can be processed simultaneously, and; (viii) It is a relatively low cost technique.

The present investigation is aimed at comparing the two methods of quantitative fluorescent PCR (QF-PCR) and conventional cytogenetic for this study. Blood samples are collected from couples and karyotyping conducted by analysis of G and/or C banding. Metaphase spreads are prepared from phytohaemaglutinin-stimulated peripheral lymphocytes using standard cytogenetic techniques. Multiplex and simple QF-PCR assays will be performed on DNA samples analyzing specific short tandem repeat (STR) markers for chromosomes 2, 7, 13, 15, 16, 18, 21, 22 and X. The result of this study will help in evaluating unestablished frequency of spontaneous abortions in Pakistan.

PP 42

Analysis of Interaction of Quorum Sensing Autoinducers, Flagellum and cyclicAMP Receptor Protein on Exopolysaccharide Signaling & Virulence Expression in *Vibrio cholerae*

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Vibrio cholerae, the gram-negative aquatic bacterium is the causative agent of outbreaks of cholera which is a potential threat towards public health in the developing countries. The bacterium can persist outside the human host and alternates between planktonic and biofilm community lifestyles. The biofilm lifestyle is maintained through secretion of exopolysaccharides (EPS) ensuring their long survival within aquatic bodies in regions of endemicity and also by multiple signal transduction pathways including quorum sensing. Recent studies have indicated the importance of the cyclic AMP receptor protein (CRP) as a regulator of EPS expression and bioflim formation in certain *Vibrio cholerae* strains through HapR-mediated pathway, a quorum sensing regulator. In a subset of *Vibrio cholerae* with prime epidemiological focus, a flagellum – dependent signal transduction pathway was identified which regulates the EPS expression, phase transition in colony morphology, biofilm formation as well as virulence expression. Objectives: to understand the role of quorum sensing signaling autoinducer molecules [eg.CAI-I, AI-2 and cAMP receptor protein (CRP)] in EPS signaling & virulence expression, and their subsequent interaction with *flaA-vpsR* signal transduction circuit. By genetic analysis through preparation of deletion mutants of the genes relevant for autoinducer(s) and flagellum biosynthesis, and also by subsequent phenotypic studies including autoinducer(s) cross-feeding to the respective mutants we established that autoinducers and flagellum are two major signaling units for EPS expression in this subset. Both signaling units utilize sodium –driven flagellar motor and VpsR in their EPS cascade in a LuxO-independent manner. These two major EPS signaling units have a significant contribution to cholera toxin production and intestinal colonization. Further, *crp* deletion analysis was also done and a significant insight has been obtained. We predict a cell density-dependent alternative mechanism for exopolysaccharide expression to be functional in this epidemic subset of *Vibrio cholerae* that involves complex interplay of different signalling components but no influence of LuxO.

PP 43

FREQUENCIES OF ABO AND RHESUS BLOOD ALLELES IN A STRICT ENDOGAMOUS SUB-TRIBE OF SINDH (PAKISTAN): (TRIBE: NOOHANI SUB-TRIBE SETHARANI)

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The population genetic studies on a small sub-tribe of 50 strictly endogamous individuals, i.e. tribe Setharani, Noohani settled in southern Sindh (Pakistan) suggest a typical allelic frequencies of Rh (D=1.0, d = 0.0) and ABO (A = 0.58, B =0.05, O =0.40). This frequency is different from main Noohani tribe, settled in the northern Sindh and other populations of Sindh. The blood groups appearing in different individuals can be conventionally explained on a polyallelic inheritance for ABO-blood locus. The strict endogamy exercised in the tribe does not appear to cause any ill effect.

PP 44

KNOWLEDGE AND PREVENTIVE PRACTICES OF LEPTOSPIROSIS AMONG FARMERS IN THE KALUTARA DISTRICT

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Background and objectives: Leptospirosis is a globally important zoonotic disease. This disease causes considerable morbidity and mortality among farmers. There were 204 deaths recorded in 2008 in Sri Lanka. Therefore knowledge of the farmers' regarding the disease and following appropriate preventive practices are important. This study assesses the knowledge and preventive practices on leptospirosis among rural farmers in Kalutara District. To describe: the level of knowledge about leptospirosis, their practices regarding prevention and to verify whether they are putting their knowledge into practices.
Methods: This was a descriptive cross-sectional study, carried out in Agrarian services division Horana. 205 farmers were selected by probability sampling method. Data collection was done using a self administered questionnaire.
Results: Among the 205 participants more than 80% had a good knowledge of leptospirosis. Contact with infected water as a mode of transmission was known by 90.7%. 93% were aware that the nfection can travel through skin breeches and walking in contaminated water. Respondents were aware of fever 97%, headache 95% and muscle pain 80% as the main clinical features. 95% of them knew leptospirosis was a lethal condition and need to seek medical treatment if they suspected the disease. 95% of them identified controlling breeding places as a preventive measure. More than 20% of them never use antibiotics and water proof plasters. 28.5% never use boots and 38.5% never meet MOH/PHI among the sample.
Conclusions: Even though knowledge about the disease and preventive practices are adequate, majority do not put their knowledge into practice.

PP 45

PREVALENCE AND DETERMINANTS OF MUSCULOSKELETAL PAIN IN FOUR OCCUPATIONAL POPULATIONS IN SRI LANKA

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Background and objectives: To assess the prevalence and determinants of musculoskeletal pain in four occupational populations in Sri Lanka.
Methods: A structured questionnaire was administered at interview to samples of postal workers sewing machinists, nurses and computer operators and explored about pain in the previous month at six anatomical body sites and about possible physical & psychosocial risk factors. Associations were assessed by binomial regression
Results: Response rate was 86% (n=852) lower back pain was the most common with prevalence ranging from 12.4% in computer operators to 29.7% in nurses Postal workers had the highest shoulder pain (22.8%) but pain in the wrist/hand was relatively uncommon in all four occupational groups. Low mood and tendency to somatise were each consistently associated with pain at all six sites. After adjustment for psychosocial risk factors, low back pain in nurses and postal workers was higher than computer operators, a higher rate of shoulder pain in postal workers relative to other occupations and a relatively low rate of knee pain in computer operators.
Conclusions: Rates of regional pain especially at the wrist/hand were lower than have been reported in western countries. As elsewhere, pain was strongly associated with low mood and somatising tendency. Differences in patterns of pain by occupation may reflect differences in physical activities.

PP 46

KNOWLEDGE OF OSTEOPOROSIS AMONG FEMALES BETWEEN 30 – 50 YEARS OF AGE IN SELECTED AREAS OF COLOMBO DISTRICT

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Background and objectives: Osteoporosis is one of the leading problems among women in this age group. The objective of the study was to describe the extent of knowledge, selected personal factors affecting knowledge and the source of knowledge on osteoporosis.
Methods: A cross sectional descriptive study was performed on 384 women attending the Out Patients Department (OPD) in three selected hospitals in Colombo district. Data was collected using an interviewer administered questionnaire and analyzed using SPSS.
Results: The mean age of the study population was 40.44 years. Among those who were knowledgeable, 22% had good knowledge while 62% and 16% had moderate and poor knowledge respectively. There was an association between overall knowledge about osteoporosis and the level of education (P=0.000), total monthly income (P=0.000) and employment (P=0.000). Higher knowledge was seen among professionals and among associate professionals (69.6%), those who were educated up to A/Ls and above (97.8%), and those with income more than Rs.30000 (76.1%). There was no association between the age and personal experience (P=0.056) with the knowledge. Television was found to be the most widely used source of information (51.8%).Minority of women (6.3%) had not even heard the word osteoporosis, while 8.1% knew the word, but had no further knowledge.
Conclusions: Majority of the study population had a moderate level of knowledge. Awareness regarding osteoporosis needs to be strengthened. Television programmes to raise awareness is beneficial. Health professionals can play a better role in prevention of osteoporosis by health education.

PP 47

ASSESSING THE KNOWLEDGE AND PRACTICES OF FOOD SAFETY & HYGIENE AMONG PRE-SCHOOL TEACHERS IN GALLE DIVISIONAL SECRETARIAT AREA

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Background and objectives: A descriptive cross-sectional study was conducted among 151 pre-school teachers in Galle divisional secretariat area, to assess knowledge, attitudes and practices on food safety and hygiene.

Methods: Data was collected using self-administered questionnaire and analyzed using SPSS 15.0. Correlation analyses were carried out between knowledge and practices of the sample with their age groups, education levels and whether they were following courses in food safety.

Results: 77% of sample was aware of bacteria being a causative agent of food borne illnesses (FBI), however, similar percentage did not know that parasites are also another causative agent. Subjects were not aware about the storage temperature, for meat and milk. 50% of the subjects had not heard about Salmonella typhi and Shigella as causative organisms of FBI. 44% were not aware of vomiting being a main symptom of FBI. About 77% of the sample did not check for unusual odour or spoiled taste of foods during purchasing. About 55% of sample did not wash their hands after gardening or returning from work. Food safety knowledge score of the sample was 17.2±2.7 (maximum-35). Preventive measures score was 4.7±1.0 (maximum-10). There was no significant relationship between age group, following courses on food hygiene, education level with the achieved grade on knowledge and practices of subjects ($P > 0.05$).

Conclusions: Knowledge on food safety and hygiene among the study population is of moderate level. Their knowledge aspects and practices with regard to food safety need to be further improved.

PP 48

EVALUATION OF PREVALENCE AND AWARENESS LEVEL OF OCCUPATIONAL HEALTH HAZARDS OF THE WORKERS ENGAGED IN INFORMAL SECTORS

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Background and objectives: The main aim of the present investigation was to evaluate the occupational health hazards of the workers of the informal sectors and their awareness level about the occupational health hazards.

Methods: For the present study 700 workers, who were engaged in agriculture, brick kiln, golden thread work and mat weaving, were randomly selected. The MusculoSkeletal Disorders (MSD), perceived rate of body part discomfort, work posture, and center of gravity of the male and female workers were studied. A questionnaire was developed to assess different aspects of awareness level of the workers regarding the occurrence of occupational health hazards.

Results: Results showed that the MSD was highly prevalent in lower back, thigh, and shoulder among the workers engaged in rice cultivation and other industrial tasks. The prevalence of MSD was higher in agricultural workers than that of industrial workers. The female workers had greater prevalence of MSD in all body segments than the male workers. The perceived rate of body part discomfort was significantly higher in agricultural and brick making workers than that of golden thread and mat workers. From the postural study it was noted that agricultural workers had to work under bending posture for a longer time than the brick workers. Shift of the center of gravity during work might impose a higher degree of pain and discomfort in the workers. The awareness level of the workers about occupational health was low.

Conclusions: Ergonomic intervention may be an aid to increase the awareness level and occurrence of occupational health problems.

PP 49

A PHYSIOLOGICAL CHANGE MAY EMERGE AS A PSYCHOLOGICAL CRISIS (A CASE STUDY)

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A mother of a 17 year old girl complained to a doctor that her only daughter was withdrawing from all social interaction and interpersonal relationships due to the dread of acne. The daughter met many doctors for treatment of acne but felt their efforts were useless and subsequently refused to see doctors or continue her academic activities. This case illustrates the psychological effects of acne on teenagers.

The psychological impacts of acne are of concern as they affect teenagers during development of their personalities. During the teenage period, they value their physical appearance and it helps them to develop peer status. It may be interpreted that acne causes development of a low self confidence, many psychological effects and receding of one's social behaviour. We hypothesize that the physiological changes of once body can be reflected as a psychological crisis. It may be deduced that psychological counseling for teenagers suffering from acne is a necessity.

PP 50

HYDRATION ASSESSMENT; FEASIBLE OPTIONS FOR ATHLETES

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Background and objectives: Monitoring hydration status of athletes in the field is essential to reduce adverse consequences of dehydration. The objective was to compare field options for assessment of hydration (urine color) against a reference method (urine osmolality) in national level athletes in Sri Lanka.

Methods: National athletes (n=107) were recruited for a study on hydration status. Change in hydration status was measured using pre and post training urine samples. Osmolality and urine color were assessed using an advanced micro osmometer (Norwood model 3MO, USA) and a urine color chart (Armstrong, et al. 1994) respectively. All assessments were made during a typical training session. Change in urine color versus change in osmolality was assessed using bivariate correlations. Hypohydrated athletes were identified using urine osmolality (>900mOsm/kg) and identification capacity of hypohydration status by urine color (urine color > 4) were compared.

Results: Change in urine osmolality was positively correlated ($r = 0.749$, $P < 0.01$) with change in urine color. At post session, 24 athletes were hypohydrated by osmolality. All 24 subjects were also identified by urine color.

Conclusions: Assessing urine color with the use of a urine color chart is a feasible field method in Sri Lankan athletes.

PP 51

COMPARATIVE STUDY OF AUTONOMIC RESPONSE TO ISOMETRIC EXERCISE IN OBESE AND NON-OBESE HYPERTENSIVE PATIENTS

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Background and objectives: Heart Rate Variability (HRV) has emerged as a practical, non-invasive tool to quantitatively investigate cardiac autonomic dysregulation. It is accepted and widely considered as a standard parameter for assessing autonomic nervous system functions. Obesity, hypertension and diabetes mellitus are known to be associated with dysregulation of autonomic functions independently. The present study was undertaken to ascertain whether obesity has any effect in further disruption of autonomic functions particularly in hypertensive patients. To know the effect of isometric exercise on autonomic functions in obese and non-obese hypertensive patients by determining HRV.
Methods: HRV was determined in 32 obese and 32 non-obese hypertensive patients of both sex aged 30-50years visiting the primary health centre, yelwala at Mysore district. One minute HRV was analyzed during deep breathing and defined as the difference in beats/minute between the shortest and the longest heart rate interval measured by electrocadiographic recording during six cycles of deep breathing. Two recordings were done, one before isometric exercise, taken as basal reading and the second recording immediately after exercise. Appropriate statistical methods were applied for analysis.
Results: HRV was significantly decreased in obese hypertensive patients than non-obese hypertensive patients.
Conclusions: Our present study supports that obesity probably has an additive effect in causing autonomic dysregulation in hypertensive patients.

PP 52

Assessment of Health Related Physical Fitness in a Group of Adults

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Background and objectives: The aim of this study was to assess the components of health related physical fitness in a group of males and females from Kandy district.
Methods: The aerobic fitness of 126 males and 73 females from different age groups (18-59 yrs) was assessed by the 20m Pacer test (Progressive Aerobic Cardiovascular Endurance Run), muscle strength by the grip test, muscle endurance by the pushup and partial curlup tests, and flexibility by the sit and reach test. Values were compared with published norms from other countries.
Results: Our results indicate that males and females of all age groups had significantly low aerobic fitness. The percentage of males and females in age groups 18-29, 30-39, 40-49, and 50-59 who had poor aerobic fitness is 73, 85, 59, and 75 100, 76, 59, and 95 respectively. Comparing the grip strength and pushup test too, most individuals fall into the poor and average categories. The partial curl up test which indicates endurance of abdominal muscles, a greater percentage of males have good and excellent vales (84%, 56%, 19%, and 54% respectively for 18-29, 30-39, 40-49, and 50-59 age groups). Both males and females have performed better in the sit and reach flexibility test with 73%, 65%, 81%, and 67% for males 25%, 76%, 35%, and 67% for females respectively for the age groups 18-29, 30-39, 40-49, and 50-59.
Conclusions: Thus it appears from these data that the physical fitness, especially aerobic fitness, in these subjects is far lower than western normal populations.

PP 53

STUDY ON SOME PHYSICAL QUALITIES OF NATIONAL LEVEL RUNNERS

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Background and objectives: It is important to have knowledge on the physical qualities that are required to become a national level runner for identification and development of high caliber athletes.
We conducted a study to compare maximum oxygen consumption (VO_{2max}), body fat %, ventilator functions and hamstring and back muscle strength in national level short and middle distance runners and long distance runners.
Methods: Maximum oxygen consumption was measured using a Monarch 828E bicycle ergo meter. Height was measured using a stediometer while body fat % was measured using skin fold measurements and also impedance technique. Ventilatory functions were assessed using a portable spiro meter, Spiro flow 75.
Results: Data obtained from short and middle distance runners were pooled and compared with the long distance runners. Mean (SD) of age, height, weight, BMI, fat percentage, VO_{2max}, vital capacity, forced vital capacity, peak expiratory flow, back muscle strength and hamstring strength in marathon runners were 27.8 (4.8)yrs, 163.1(4.8) cm, 51.7 (5.1) kg, 19.4 (1.6), 9.5 (3.5) %, 60.2 (11.0) ml/kg/min, 4.8 (0.9) L, 4.7 (1.8) L, 8.4 (2.0) L/s, 85.3 (19.8) kg, 90.5 (16.8) kg respectively. Mean age, height, weight, BMI, fat percentage, VO_{2max}, vital capacity, forced vital capacity, peak expiratory flow, back muscle strength and hamstring strength in short and middle distance runners were 24.8 (2.99) yrs, 170.5 (5.8) cm, 62.1 (8.5) kg, 21.3 (2.4), 11.7 (4.8)%, 46.9 (7.7) ml/kg/min, 5.1 (1.3) L, 5.7 (1.9) L, 9.3 (2.8) L/s, 90.0 (16.5) kg, 99.0 (0.05) kg respectively. Statistically significant differences were found between the two groups for values obtained for mean age ($p=0.05$), height ($p=0.001$), weight ($p=0.05$), BMI ($p=0.001$), VO_{2max} ($p=0.001$), forced vital capacity ($p=0.05$) and hamstring strength ($p=0.05$).
Conclusions: We conclude that there are significant differences in some of the physical qualities between long distance runners and middle and short distance runners. These differences should be considered when selecting and training individuals for different running.

PP 54

COMPARISON OF ABDOMINAL MUSCLE ENDURANCE AND BMI IN A GROUP OF SEDENTARY AND PHYSICALLY ACTIVE ADOLESCENT GIRLS

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Background and objectives: Abdominal muscle strength and endurance training has a vital part in Physical fitness training. Therefore athletes, swimmers etc. perform abdominal exercises to maintain the core strength. This preliminary study was designed to compare the abdominal muscle endurance (variable 1) and weight status based on Body Mass Index (BMI, variable 2) between sedentary and physically active adolescent girls.
Methods: This study was conducted among 70 adolescent girls aged 12 to 17+ years currently studying in Devi BalikaVidyalaya, Colombo 08. Study sample was selected based on information obtained through a self-administered questionnaire and students were categorized into sedentary (A, n=35) and physically active (B, n=35) groups according to the number of hours they spend on physical training within a week. Weight, height and number of curl ups performed were measured and body mass index was calculated. Abdominal curl up test performed till exhaustion was used to measure abdominal muscle endurance.
Results: Study sample consisted 52.86%, 38.57% and 8.57% subjects in the normal range, underweight and overweight categories respectively. There was a statistically significant difference in performed abdominal curl ups between physically active and sedentary students ($p= 0.000$) and BMI values were not statistically significant between the two groups ($p=0.411$). A positive Pearson's correlation which is not statistically significant was found between performed number of abdominal curl ups and weight and height in groups A and B.
Conclusions: Abdominal muscle endurance is significantly higher in a group of physically active adolescent girls compared to their sedentary counterparts.

PP 55

THE PREVALENCE OF HAMSTRING TIGHTNESS AMONG MALE ATHLETES OF UNIVERSITY OF PERADENIYA IN 2010

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Background and objectives: Muscle tightness is caused by a decrease in the ability of the muscle to deform, causing a decrease in the range of motion at the joint on which it acts. Tightness in hamstrings leads to hamstring injuries and hamstring injuries are the most common type of injury among athletes. The purpose of this study is to find the prevalence of the hamstring tightness among some categories of the sports and to find out whether there is relationship of hamstring tightness with body height; femur length; duration of warm-up and cool-down period.
Methods: This was a descriptive study with 128 male athletes. A self-administered questionnaire was given and clinical examinations were routinely performed. Hamstring tightness assessed by measuring the active knee extension angle and tight hamstrings was defined as knee extension range of motion less than 160°.
Results: There was no significant difference ($p<0.05$) between hamstring tightness vs. body height; femur length; duration of warm-up and cool-down period. Prevalence of hamstring tightness is present at significantly higher rates among athletes in contact sports rather than athletes in athletics, martial arts and other sports respectively.
Conclusions: Prevalence of hamstring tightness is present at significantly higher rates in contact sports rather than in other sportscategories. Within the confines of this study it was found that there is no significant association between hamstring tightness and body height, femoral length, duration of warm-up and cool-down periods of the athletes who were engaged in each category of sports. Therefore precautions to prevent hamstring tightness should be a major concern in contact sports.Majority of athletes had higher percentage of hamstring tightness in right leg and the cause is unknown. Future researchers have open area here for further reveal.

PP 56

STUDY OF RATE PRESSURE PRODUCT CHANGES TO ISOMETRIC LEG PRESS EXERCISE TEST IN NORMAL WEIGHT AND OBESE YOUNG ADULTS

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Background and objectives: Obesity is becoming a global epidemic in children and adults. It is a risk factor for hypertension, cardiac arrhythmias and coronary heart diseases, & proposed as a risk factor for ventricular arrhythmias and sudden death. In India prevalence of obesity is increasing in childcren and adolescents. Different types of physical exercise influence heart rate and blood pressure response. Blood pressure is regulated by autonomic nervous system. Obesity is associated with higher sympathetic activity. There is a need to know that the effect of exercise training might decrease body mass index which could be reflected with improvement in their cardiorespiratory fitness. The objective of the study was to study the Rate Pressure Product (RPP) changes to isometric leg press exercise test in obese young adults.
Methods: It is a prospective study including 40 subjects, who were students of 1st MBBS of JSS medical college, aged between 18-21years. The group was subdivided into study group comprising 20 students who are obese with BMI >25 kg/$m^{2,}$ the remaining 20 are control with BMI 19 -24.9kg/ m^2. Baseline ECG was recorded for 5 minutes in lead II using power lab multichannel polygraph instrument. Heart rate is recorded. And systolic blood pressure is recorded using mercury manometer. . Both the groups were asked to perform isometric exercise at 40% of their maximum voluntary contraction using leg dynamometer till the point of fatigue. Lead II ECG was taken immediately after exercise to calculate heart rate. And SBP is recorded. RPP is calculated as a product of Heart rate & Systolic blood pressure.
Results: Statistical analysis was done using independent T-test. Before exercise test, baseline RPP was significantly higher in obese groups ($P<0.05$). There was significant increase in RPP to isometric exercise in both the groups. But the increase is lower in obese when compared to normal weight young adults after isometric exercise test.
Conclusions: Obese group with decreased response to isometric leg press exercise test indicating there is cardiac sympathetic activity dysfunction.

PP 57

RELATIONSHIP BETWEEN THE STRIDE LENGTH OF NORMAL GAIT AND THE STANDING HEIGHT OF HEALTHY YOUNG ADULTS.

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Background and objectives: The main objective was to ascertain the relationship between the stride length of normal gait and the standing height of healthy young adults. This study discusses the standing height, BMI and stride length of both genders and development of a predictive equation to screen individuals stride length by their standing height.

Methods: This descriptive study was conducted at University of Colombo with the participation of young students including 40 males and 40 females, aged between 20 to 30 and BMI ranging between 18.5 – 24.9 that were selected using convenient sampling. A paper walkway was used to measure stride length of the subject. A weighing scale and stadiometer were used to measure the weight and standing height respectively.

Results: Among the young adults the stride lengths decreased with BMI in even normal ranges though it was not significant ($p>0.01$).The stride length of young males (range= 0.978m-1.698m, mean=1.3683, SD=0.2133) and young females (range= 0.905m-1.850m, mean=1.2434, SD=0.18892) showed significant difference within normal BMI range ($p< 0.05$). The stride length increased with the standing height of young adults significantly($p<0.01$). As there was a linear relationship, the stride length of young adults can be computed by using 'Stride Length = [1.1157 * Standing Height] - 0.5202' equation.

Conclusions: The stride length during normal walking depends on the standing height of young adults within normal BMI. Gender difference was one of the other factors determining the stride length of young adults. However, the quantities of stride length that increase with standing height vary according to gender.

PP 58

A PRELIMINARY STUDY OF THE RELATIONSHIP BETWEEN DEMOGRAPHIC FEATURES AND GAIT PARAMETERS IN HEALTH.

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Background and objectives: Walking speed, stride length and cadence are functions of body height, weight, and gender which may vary with the population studied. Above data is lacking for the Sri Lankan population. The aim of this study was to describe the relationship between gender, height & weight with walking speed, cadence and stride length.

Methods: In 30 healthy undergraduates (Mean+/- SD; age-23.27,+/-1.11 years; height-164.5,+/-8.96 cm; weight 57.35+/- 0.83 kg) & 30 healthy elders (Mean+/-SD; age- 66.9+/-6.013years; height-151.07+/-9.28cm; weight-54.5, +/-12.93kg), stride length, walking speed and cadence were measured using footprint analysis in a 6-m walkway.

Results: Stride length increased with height in young adults ($p<0.05$), & with both height ($p<0.05$) and weight ($p<0.005$) in elders. Cadence decreases with both height ($p<0.001$) and weight in young ($p<0.01$). Stride length increased in young men when compared to young women ($p<0.05$), but these differences are only apparent. There was no difference in walking speed between men and women in both young and elders ($p>0.05$). Young women showed significant increase in cadence when compared to young men ($p<0.001$) which was not significant in the elders ($p>0.05$).

Conclusions - Gait parameters in healthy participants are affected by gender, height and weight but the influence has differed according to the population studied. Difference results have obtained by the studies of California, USA, Netherlands and so on. Correcting gait for individual characteristics is required in assessing an abnormal gait in clinical assessment & rehabilitation.

PP 59

A PRELIMINARY STUDY COMPARING GAIT PARAMETERS BETWEEN TWO GROUPS OF YOUNG ADULTS AND ELDERS IN SRI LANKAN POPULATION.

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Background and objectives: Gait impairment in elders is associated with loss of physical function. Moreover, elders who walk slowly are three times more likely to die from cardiovascular disease than those who walk faster. Understanding gait changes with ageing is important to develop and evaluate effective interventions for the increasing elderly population at risk of falls and non-communicable diseases. This study was aimed to compare the speed of walking, stride length and cadence between young and elders.
Methods: Stride length, walking speed and cadence were measured in 30 young and 30 elders using footprint analysis in 6m walkway. Results were compared using independent sample T test.
Results: Young had significant increase ($p<0.001$) in stride length (young Mean=128.5cm, SD=+/-16.44 cm, elders-Mean=83cm, SD=+/-18.61cm) and walking speed (young-Mean=0.85, SD=+/-0.14m/minute, elders Mean=0.57, SD=+/-0.18 m/minute). The natural walking speed of the elders was 32% less than the young. There was no significant change ($p>0.05$) in cadence (young-Mean=80, SD=+/-10.40steps/minute, elders-Mean=87, SD=+/- 30.30 steps/minute).
Conclusions: Elders exhibited significant reduction in stride length and walking speed when compared to the young but cadence was not significantly affected. This may reflect a potential for gait-related disabilities. This study is an eye-opener for physicians and physiotherapists, regarding the need to minimize age-related gait changes by promoting regular physical exercise programs, strength and balance training and the use of assistive devices in elderly. Larger studies are needed addressing gait changes with ageing in Sri Lankan population.

PP 60

EFFECTIVENESS OF A MUSCLE STRENGTHENING PROGRAM IN A GROUP OF DISABLED MILITARY PERSONNEL – A PRELIMINARY STUDY

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Background and objectives: During the 30 year civil war in Sri Lanka a large number of soldiers were injured and their disabilities have changed lifestyle factors and reduced their daily physical activities. This in turn is correlated with lower muscle strength and may lead to a greater degree of disability. The objectives of this study were to evaluate muscle strength in a group of soldiers with upper and lower limb disabilities and assess the effectiveness of a muscle strengthening programme.
Methods: Altogether 159 injured soldiers were recruited for this study. Muscle strength was assessed in the shoulder (flexors, extensors, abductors) elbow (flexors, extensors), wrist (flexors, extensors), hip (flexors, extensors, abductors) knee (flexors, extensors), and ankle (dorsiflexors, plantar flexors) using the Medical Research Council scale (MRC/0-5).
Results: Our results indicate that of these 159 subjects, 27 had muscle strengths in grade 5, 64 in grade 4, 39 in grade 3, 16 in grade 2 and 13 in grade 1. 27 subjects from those with muscle strength of grades 4 and below were recruited for a regular muscle strengthening schedule for a period of 3 months. Reassessment of the muscle strength was done at the end of this period. In the reassessment group 11 (40.74%) showed an improvement of one grade and 4 (11.11%) showed an improvement of two grades at the end of the muscle strengthening program.
Conclusions: Thus, a regular muscle strengthening program may improve the muscle strength of disabled military soldiers which in turn may lead to an improvement of their overall condition.

PP 61

PATIENT SATISFACTION WITH PHYSIOTHERAPY TREATMENTS FOR MUSCULOSKELETAL PAIN AT NATIONAL HOSPITAL, SRI LANKA

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Background and objectives: Patient satisfaction is one of the indicators of the quality of care which can be used as benchmarks for ensuring the delivery of quality physiotherapy services in health facilities. Objective was to investigate the satisfaction of musculoskeletal pain sufferers with the physiotherapy services they receive in National Hospital of Sri Lanka. In addition to get an idea about general satisfaction, patient's perception, interpersonal relationship, communication, treatment time, accessibility for services and convenience with physiotherapy treatments.
Methods: A cross-sectional study design utilizing quantitative research method was chosen. A self-administered five point Likert Scale questionnaire was administered to collect information on patient satisfaction using a convenient sample of 100 musculoskeletal pain sufferers. Descriptive statistical data analyses were carried out using SPSS.
Results: Overall level of satisfaction with services stood at 69%. The highest level of satisfaction obtained by any scale was 80% which was for communication. The lowest level of satisfaction (60%) was for general satisfaction. There were 81% of participants who had the enough knowledge of physiotherapists.
Conclusions: Patients were generally satisfied with the physiotherapy service for musculoskeletal pain and they rated their level of satisfaction as high. Although the survey results indicated that patients were satisfied with physiotherapy service for musculoskeletal pain, it is recommended that patient satisfaction surveys be an ongoing process. The feedback from the patients should be considered to further improve the services based on their comments.

PP 62

THE INFLUENCE OF PHYSICAL EXERCISE DURATION ON NITRIC OXIDE AND VON WILLEBRAND FACTOR LEVELS (PURE EXPERIMENTAL RESEARCH ON RATS)

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Background and objectives: Heavy physical exercise is presumed to cause some changes in endothelial cells through physical and chemical trauma that occur during physical exercise. This study was aimed to assess the influence of physical exercise duration to Nitric Oxide (NO) and von Willebrand Factor (vWF) bloods level.
Methods: This research was pure experimental study with one way full randomized design. Forty rats were divided into 4 groups. Each group was given treatment physical exercise session as long as 20, 40, 60 minute, and control. After intervention, the NO and vWF blood concentration of the rats was measured by ELISA technique. The difference of average blood concentration between groups was analyzed by ANOVA test.
Results: The results of research showed that average of NO for control group was 246 ± 49 µmol/L, first group was 238 ± 67 µmol/L, second group was 239 ± 37 µmol/L, and the third group was 213 ± 94 µmol/L. There was no difference in the average of NO concentration among the groups. The difference in average concentration of vWF (K: 160±88 pg/ml, P1: 198±77 pg/ml, P2: 282±144 pg/ml and P3: 283±78 pg/ml between groups was significant. After continuing post hoc analysis there was no significant difference for vWF.
Conclusions: Duration of physical exercise session influences the function of vascular endothelial cells. Continued research is needed in humans to asses the effect of physical exercise on vascular endothelial cells by using the parameters of vWF as a predictor in determining the dose of exercise.

PP 63

EFFECTIVENESS OF INTERVENTIONAL METHODS IN REDUCING PESTICIDE OVEREXPOSURE IN VEGETABLEE CULTIVATORS IN THE CENTRAL PROVINCE OF SRI LANKA

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Background and objectives: We investigated the effectiveness of interventional methods used during pesticide spraying by assessing ventilatory functions and respiratory symptoms in vegetable cultivators in the central province of Sri Lanka.
Methods: 77 farmers (male) were provided with protective gear to use during spraying of pesticides. The control group (76 male farmers) did not use protective gear. A questionnaire was administered to obtain data regarding respiratory symptoms such as cough, wheezing, breathlessness and phlegm. Respiratory functions (FVC, FEV_1 FEV1/FVC, PEFR, MEF50%) were measured using a portable spirometer.
Results: The average ventilatory functions of the interventional and control group respectively were; FVC value of 3 .74 and 3. 80 L, FEV1 value of 3 .27 and 3 .20 L, FEV1/FVC values of 88.02% and 85. 67%, PEF values of 8.58 and 7. 31 L/s and MEF50% values of 4.62 and 2.05L/s. There was no significant difference between the two groups. The percentage of wheezing and phlegm among the interventional and control group was 15.58% and 18.42%, 29.87% and 38.15% respectively.
Conclusions: There is a trend showing that respiratory functions and symptoms improve with the use of protective gear during pesticide spraying.Though this study showed that it was not significant, a long term study might show that there is a significant improvement in the ventilatory functions with the use of protective gear during spraying of pesticides.

PP 64

EFFECTS OF PULMONARY REHABILITATION ON LUNG FUNCTIONS IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Background and objectives: Concerning the improving effect of individual pulmonary rehabilitation (PR) program on the physical efficiency of COPD patients this observational study was designed to evaluate the effects of combination of pursed lip breathing, diaphragmatic breathing and lower extremity endurance training (as pulmonary rehabilitation program) on lung function status (FVC, FEV_1, FEV_1/FVC ratio, PEFR, FEF25-75%) in male patients with moderate stable COPD.
Methods: This study was carried out in the Department of Physiology, BSMMU, Dhaka from July 2010 to June 2011 on 116 male stable moderate COPD patients (50 to 65 years). All the patients were grouped as control (56 patients without rehabilitation) and experimental (60 patients with rehabilitation). The above mentioned PR program was advised to the experimental patients to perform them 30 minutes duration per session at home twice daily, for consecutive 60 days, along with the standard drug treatment of COPD. On the contrary, the control patients were advised to continue their standard drug treatment alone for consecutive 60 days. All the above mentioned study variables were assessed on day 0 and day 60 for both the groups and the statistical analysis was done by independent sample't' test and paired Student's 't' test.
Results: A trend of improvement was observed in all the lung function variables in comparison to the control patients after 60 days of follow up.
Conclusions: The study reveals improvement of lung functions with this sort of combination of PR program in COPD patients.

PP 65

COAL EXPOSURE AND LUNG FUNCTIONS - AMONG COAL POWER PLANT WORKERS, SRI LANKA

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Background and objectives: The subject of controversy in many occupational research settings is to what extent is occupational dust exposure responsible for respiratory disability. The present study attempted to determine the association between exposure to coal dust and respiratory functions amongst workers in the sole coal power generating plant in Sri Lanka.

Methods: A descriptive cross sectional study was carried out among 51 direct coal handlers (CH) and 29 office workers (NCH). Cardio-respiratory function was assessed by an interviewer administered questionnaire, clinical examination and spirometry. The results were analysed at uni-variate and multi-variate levels.

Results: Forced Expiratory Volume in the 1st second (FEV_1) was (Mean ± SD) 2.8 ± 0.5 l for NCH and 3.1 ± 0.5 l for CH, p = 0.045 and Forced Expiratory Flow (FEF25-75%) was (Mean ± SD) 2.7 ± 1.0 l/s for NCH and 3.2 ± 1.1 l/s for CH, p =0.031 were significantly lower among the NCH group. The FEV_1 and FEF 25-75% were significantly correlated negatively with the duration of employment among these workers (Pearson's correlation coefficient -0.225 and -0.222 respectively; p values 0.045, 0.031 respectively).Duration of work (Total hours of exposure / Total hours he has spent in the working environment) ranges from 480 – 11520 hours with a median of 4068 hours and a mean of 4451 hours. Standard deviation was 2446 hours.

Conclusions: Impairment of small airway function was noted among the NCH group. This study recommends provision of an enclosed work area for office workers in the coal power plant and to adopt measures to reduce emission of coal dust to the environment. It highlights the need for further studies to assess the long term effects of coal exposure on lung function amongst the exposed.

PP 66

SEMINAL PLASMA LEAD AND SEMEN PARAMETERS IN MALE PARTNERS OF INFERTILE COUPLES INVESTIGATED AT A SELECTED CENTRE

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Background and objectives: Effect of lead (Pb) on semen quality has not been studied in Sri Lanka. Hence this study was done to determine the association between seminal plasma lead levels and semen parameters. Materials and **Methods:** Male partners (n=296) of couples investigated for infertility at Vindana reproductive health centre were recruited from July 2010 to October 2011. Sperm count motility, morphology and viability were analysed according to the WHO guidelines. Seminal plasma lead was estimated by Graphite Furnace Atomic absorption spectrophotometry after digestion with Nitric acid. Means of semen parameters were compared and the differences in normal and abnormal sperm parameters were done in Pb positive and negative groups using Chi-square tests.

Results: The mean (SD) of age duration of the infertility and BMI of the subjects were 34.84(5.34) years 45.70(35 10) months 24.42(4.28) Kg/m2 respectively. Lead was positive in 38 5% of men. The mean (SD) of lead level was 15.81(26.20) µg/dl. The means (SD) of count (59.6 (52.9) million/ml) (63.9 (53.7) million/ml) viability (51.3 (18.5) %) (52.8 (20.3) %) progressive motility (40.8(16.3) %) (41.2(19.4)%) and normal morphology (35.7(17.6) %) (35.9(17. 3) %) were lower in men with lead in seminal plasma when compared to those with no lead. The percentage of men with abnormalities in count (21% vs 19.5%) and in viability (58.3% vs 53%) was higher among lead positive than the lead negative men. Both observations were statistically not significant. There was a significant negative correlation between seminal plasma lead level and sperm count and viability ($p < 0.05$).

Conclusions: Lead in seminal plasma causes poor semen quality.

PP 67

EFFECT OF ASCORBIC ACID ON LONG TERM COLD EXPOSURE INDUCED CHANGES IN THYROID ACTIVITY IN SPRAGUE DAWLEY RATS

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Background and objectives: Body responds by heat production and heat conservation when exposed to prolonged cold. Efficient thermogenesis is achieved by the thyroid hormones. Prolonged exposure of animals to cold leads to thyroid hyperplasia, increased hormonal secretion and dietary iodine demand. In rats, cold exposure is associated with increased production of T_4 and T_3, conversion of T_4 to T_3, hepatic binding and biliary and fecal clearance. This study aimed to determine the effect of Ascorbic acid supplementation on long term cold exposure induced changes in thyroid activity in Sprague-Dawley rats.

Methods: Ninety healthy, male Sprague-Dawley rats were randomly divided into three groups of control (I), cold exposed (II) and cold exposed + ascorbic acid supplementation (III). Group II and III were given cold exposure by keeping their cages in ice-filled tubs for 1hr/day for one month. For the rest of the day they were kept at a thermostatically controlled room temperature of 22±3°C. Group III was also given ascorbic acid supplement as 500mg/L mixed in drinking water for one month. Intra-cardiac blood sampling was done and thyroid levels analyzed by chemi-luminescent immunometric Assay on Siemens immulite 2000 analyzer.

Results: After 4 weeks of cold exposure, thyroid activity was raised significantly in the cold exposed group (p-value for T_3=0.004, T_4=0.001 and TSH=0.000). Supplementation with ascorbic acid in the 3rd group, significantly lowered the thyroid hormone activity (p-value for T_3=0.021, T_4= 0.036 and TSH=0.010).

Conclusions: Ascorbic acid prevents thyroid hormone levels from undergoing the cold induced derangements. As an antioxidant, ascorbic acid prevents the damaging effects of oxidants produced during cold stress and thus, prevents over-secretion of thyroid hormone.

PP 68

VARIATION OF THYROID FUNCTION IN RELATION TO AGE

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Background and objectives: Studies reveal that serum T_4 concentration remain unchanged or slightly decreases from childhood to senescence, but serum T_3 shows a distinct decline from middle age to senescence. Serum TSH has been reported to increase with increasing age. The objective was to study the variation of thyroid function with age.

Methods: 75 subjects (36 males & 39 females) were randomly selected for the study in the age group of 15yrs- 62 yrs. The subjects had no history or symptoms of thyroid disorder, and were not on any medications that might affect thyroid profile. Institutional ethical clearance was not obtained. The subjects were further divided into 4 groups: 15-25 years (12 males, 10 females), 26-35 years (9 males, 12 females), 36-45 years (8 males, 7 females) and ≥ 46 years (7 males, 4 females). Total T_3 and T_4 were estimated by RIA method and TSH by IRMA method.

Results: Among males, T3 and T_4 values did not vary significantly among the different age groups. Among females, T_3 values were lowest in the 36-45 years age group; they were significantly lower than the T_3 values in the 15- 25 years and 26- 35 years age group. T_4 value of females in 36-45 yrs age group was highest; it was significantly higher than T_4 values of females aged ≥ 46 years. TSH values were highest in the ≥ 46 years age group, both in males and females; the values were significantly higher than the TSH values of 15-25 yrs age group.

Conclusions: The study shows that thyroid functions are altered in individuals with increasing age. This might be attributed to the non- thyroidal illness affecting such individuals which might affect their thyroid status. However in view of the sample size and the fact that total T_3 and T_4 were estimated, further studies involving larger number of subjects and estimating their complete thyroid profile are needed.

PP 69

THE PROPHYLACTIC EFFECT OF VITAMIN C ON INDUCED- OXIDATIVE STRESS IN RAT ADRENAL GLANDS FOLLOWING EXPOSURE TO RADIOFREQUENCY WAVE GENERATED BY A BTS ANTENNA MODEL

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Background and objectives: This study was conducted to evaluate the effect of radio frequency wave (RFW) generated by base transceiver station (BTS) on oxidative stress in adrenal glands and the prophylactic effect of vitamin C by measuring the antioxidant enzymes activity including: glutathione peroxidase (GPX), superoxide dismutase (SOD) and catalase (CAT), and malondialdehyde (MDA).
Methods: Thirty-two adult male Sprague-Dawley rats were randomly divided into four experimental groups and treated daily for 45 days as follows: control, vitamin C (L-ascorbic acid 200 mg/kg of body weight/day by gavage), test (exposed to 900 MHz RFW) and the treated group (received vitamin C in addition to exposure to RFW). At the end of the experiment all groups were killed and their adrenal glands were removed and were used for measurement of antioxidant enzymes and MDA activity.
Results: The results indicate that exposure to RFW in the test group decreased antioxidant enzymes activity and increased MDA compared with the control groups ($P<0.05$). In the treated group vitamin C improved antioxidant enzymes activity and reduced MDA compared to the test group ($P<0.05$).
Conclusions: It can be concluded that RFW causes oxidative stress in adrenal glands and vitamin C improves the antioxidant enzymes activity and decreases MDA.

PP 70

HYPERTENSION: A MODIFIABLE RISK FACTOR FOR THE DEVELOPMENT OF NEUROPATHY IN SAUDI DIABETIC POPULATION.

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Background and objectives: Objective of the current study was to find an association between hypertension and sensory neuropathy in a diabetic Saudi Population in a cross sectional analytical study, which has not been fully investigated in the past.
Methods: Data for 972 patients were collected on visits at diabetology clinic of Aseer Diabetes Center from Jan 2009 till March 2012. Blood pressure was measured by standardized methodology. BP > 130/80 mmHg was labeled hypertension (HTN). Neuropathy was assessed by Michigan neuropathy screening instrument (MNSI); a score ≥ 2 was defined neuropathy. Data was analyzed by SPSS.
Results: Out of 972 patients, 613 (63.1%) were males and 359 (36.9%) females; 80 (8.2%) were type-1 and 892 (91.8%) type-2. Mean age was 56.4 years with mean duration of diabetes, 14.5 years. 440 (45.3%) patients were hypertensive and 296 (30.4%) showed neuropathy. Systolic BP was higher in subjects with neuropathy with mean 133.65±18 (95% CI, 131.56 to 135.75) as compared to those without neuropathy where mean systolic BP was 124.17±16 (95% CI, 122.94 to 125.39). Vibration perception was found to be lost with BP mean 134±17 (95% CI 132.15 to 137.24) comparing normal vibration perception with BP mean 121±14.7 (95% CI, 119.94 to 122.83). Pearson's Chi Square Statistics for the HTN & neuropathy was significant (p-value < 0.001).
Conclusions: Diabetic neuropathy affects the quality of life and may also result in cardiovascular morbidity and mortality. High blood pressure (HTN) is a modifiable independent risk factor for neuropathy development. Hence by targeting BP <130/80 mmHg, neuropathy can be controlled in diabetic patients.

PP 71

FACTORS CONTRIBUTING TO COMPLICATIONS IN DIABETES MELLITUS PATIENTS; RESULTS FROM A DIABETIC CLINIC IN SRI LANKA

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Background and objectives: To identify factors that contributes to the complications of diabetes mellitus among patients attending a diabetic clinic.
Material and Method: A descriptive cross sectional study was carried out on 152 (108 females) type 2 diabetic patients. Level of education, income, fasting blood glucose (FBG), presence of complications, level of physical activity and food habits were obtained by an interviewer administered questionnaire.
Results: Mean age of the females was 62 yrs+/-8.9 SD and males were 60 yrs +/-8.9 SD. 52.6% had a monthly income of less than rupees ten thousand. In 81 % of females and 64 % of males education had terminated between grades 5-9. Mean FBG of females and males were 180.6mg/dL (+/-61, SD) and 174.4 mg/dL (+/-73, SD) respectively. Hypercholesteraleamia (60%), hypertension (45%), and cataract (36%), were the main complications. Hypercholesteraleamia (X^2=7.177, p=0.007) and hypertension(X^2=4.605p=0.032) were commoner among females. 92% of the patients were aware of the complications of diabetes. 98.7% were aware of the importance of life-style modifications. Only 29.8% of patients engaged in physical activity for more than 3hr/week. Duration of regular physical activity was significantly less in females compared to males ((p=0.027). 61% of the patients did not adhere to dietary control. 48% did not take the prescribed drugs regularly.
Conclusions: Hypercholesterolaemia and hypertension were more common among females. Compliance of the patients with diet, drugs, physical activity was poor inspite of satisfactory awareness. Poverty and a low level of education may contribute to poor compliance.

PP 72

EFFECT OF ALOE VERA WHOLE LEAF EXTRACT ON BLOOD GLUCOSE AND LIPID PROFILE OF STREPTOZOTOCIN INDUCED DIABETIC RATS

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Background and objectives: Present study was planned to determine the effect of Aloe vera whole leaf extract on plasma glucose and lipid profile in insulin resistant type 2 diabetic Sprague-Dawley rats. Design: Randomized control trail Place and duration of study: This study was conducted from April 2009 to Oct 2010 at the Department of Physiology Army Medical College, Rawalpindi in collaboration with National Institute of Health (NIH) Islamabad. Plant identification and extract preparation was carried out at Quaid-e-Azam University Islamabad. Material and **Methods:** Type 2 DM was induced in 45 healthy Sprague –Dawley rats by feeding high fat diet for 2 weeks and injecting a low dose (35mg/kg) of streptozotocin intra peritoneally. Diabetic rats were randomly divided into three groups that were a diabetic group, an Aloe vera group and rosiglitazone group. The diabetic group was injected with normal saline; the Aloe vera group was treated with Aloe vera whole leaf extract in dose of 300mg/kg body weight and the rosiglitazone group was given 5mg/kg body weight of rosiglitazone I/P for 21 days.
Results: A significant reduction (p<0.001) in plasma glucose (62%), triglycerides (50%), total cholesterol (49%), low density lipoprotein (57%), very low density lipoprotein (50%), and increase in high density lipoprotein (50%) was observed in the Aloe vera group compared to the diabetic control group. The plasma glucose level in the rosiglitazone treated group was reduced by (68%) triglycerides (51%), total cholesterol (56%), low density lipoprotein (62%), very low density lipoprotein (56%), with an increase in high density lipoprotein (66%) compared to the diabetic control group.
Conclusions: Aloe vera whole leaf extract and rosiglitazone decrease plasma glucose and lipid levels with concomitant increase in HDL

PP 73

HEAT STRESS INDUCED ALTERATIONS IN PROTEIN, GLUCOSE AND IONIC CONTENTS OF MATURED SHEEP OOCYTES

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Background and objectives: Elevated ambient temperature is one of the major intriguing factors responsible for reduced fertility in sheep. Heat stress induces early embryonic mortality by interfering with the maturation of oocytes and early embryonic development *in vitro*. The objective of the study was to investigate the effect of *in vitro* heat stress on protein, glucose, calcium, phosphorus, ammonia, chloride and urea content of matured sheep oocytes.
Methods: Sheep oocytes having more than 5 layers of cumulus cells and granular homogenous ooplasm were cultured in culture media with 10% FBS and FSH (5 µg/ml) in carbon dioxide incubator. Control cultures were maintained at 38.5^{0}C for 24 hr. Heat stressed cultures were acclimated at 38.5^{0}C for 6 hr and then placed at 40.5^{0}C for 18 hr. Oocytes were washed and sonicated. The concentrations of protein, glucose, calcium, phosphorus, ammonia, chloride and urea content of matured sheep oocytes were measured.
Results: *In vitro* heat shock at 40.5^{0}C for 18 hrs resulted in shedding of cumulous cells and oocyte degeneration. Heat stress (40.5^{0}C) decreased significantly ($P<0.05$) protein, glucose, chloride, urea and calcium content of matured sheep oocytes. However, heat stress did not decrease significantly ($P>0.05$) ammonia and phosphorous content of sheep oocytes.
Conclusions: Heat stress adversely affected the growth and maturation of sheep oocytes by decreasing protein, glucose, chloride, urea, ammonia, calcium and phosphorous content. Alterations of protein, glucose and ionic contents may be considered as marker for oocyte growth and maturation in sheep.

PP 74

FERTILIZATION ABILITY OF HAMSTER CAUDA SPERMATOZOA IN DIFFERENT POST-LIGATION DAYS

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Background and objectives: In order to fertilize an egg, mammalian spermatozoa undergo a series of biochemical and functional changes during spermatogenesis, maturation in the epididymis and capacitaion in the female genital tract. Since sperms can be capacitated *in vitro*, *in vitro* fertilization of eggs has been done successfully in rodents such as hamster and mouse. The objective of this research was to examine fertilizing ability of hamster spermatozoa at different post-ligatory intervals using in vitro fertilization technique.
Methods: Adult (6 weeks old) hamsters (*Cricetus cricetus*) were used for this experiment. The left side cauda epididymis of each animal was ligated around the tubule between the distal corpus and the proximal cauda and the right epididymis left unaltered. On 3, 6,9,12 and 24 post-ligation days, the left cauda epididymis was dissected and used for the experiment. Immature female hamsters were super-ovulated with PMSG (Pregnant Mare's Serum Gonadotropin) and HCG (Human Chronic Gonadotrophin) and separated oocytes were incubated at the fertilization medium until spermatozoa were added for fertilization. The medium used for *in vitro* fertilization was modified Krebs-Ringers Solution (BWW). For *in vitro* fertilization, the sperm concentration for insemination was kept between 5 x 10^5 and 1 x 10^6 sperms /ml per 20 - 30 eggs.
Results: Results showed that even though high percentage of oocytes was fertilized in the control group (90% - 100%), fertilized oocyte percentage was 30% on 24 days post- ligated cauda epididymis. From our earlier study on sperm storage of ligated hamster cauda, it was found that about 2% of spermatozoa were immotile and 90% of spermatozoa were dead on 24 days of post -ligation.
Conclusions: The fertilizing ability of spermatozoa was decreased by 70% in 24 days after ligation of hamster cauda epididymis. This may be due to decrease in motility and viability of hamster cauda spermatozoa after blocking the cauda epididymis. This study will be useful to understand the fate of sperms due to the blockage of epididymal fluid flow and normal sperm movement under specific conditions.

PP 75

THE EFFECT OF MENOPAUSE ON POSTURAL BALANCE AND COGNITIVE FUNCTIONS

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Background and objectives: The present study assessed the relationship of menopausal status (premenopausal or postmenopausal) to changes in postural balance, reaction time and cognitive functions in a community based population of Sri Lankan women. The relationship between changes in these functions and serum oestradiol level was assessed in the postmenopausal women.

Methods: Forty premenopausal and 66 postmenopausal women were selected for the study from women of age 45-60 years living in the Kesbewa Divisional Secretariat area of Colombo. The following were assessed in both premenopausal and postmenopausal women: postural balance using functional balance tests; reaction time using the CALCAP software, general cognitive functions using the Mini Mental State examination test (MMSE) and verbal memory using the Rey Auditory Verbal learning test (RAVLT). Serum oestradiol levels were assessed in the postmenopausal women.

Results: There was a significant ($p < 0.05$) impairment in performance in 3 of the functional balance tests in the postmenopausal women compared to the premenopausal women and postmenopausal status remained a significant predictor of poorer performance in one of the functional balance tests when adjusted for age and body mass index (BMI). Higher serum eostradiol levels in the postmenopausal women was significantly ($p<0.05$) associated with better performance in the reaction time and RAVLT verbal memory test.

Conclusions: The study findings suggest that low serum oestradiol levels in postmenopausal women may have a role in the impairment of postural balance and cognitive functions seen in these women. Further research assessing the effect of estrogen therapy on postural balance and cognitive functions is recommended.

PP 76

EFFECTIVENESS OF WEIGHT REDUCTION AND BODY FAT MASS CHANGES IN POST MENOPAUSAL OVERWEIGHT WOMEN

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Background and objectives: The Aim of this study was to determine effectiveness of weight reduction and body fat mass changes in three month of the weight reduction programme.

Methods: A total of 32 clients categorized as overweight and post menopausal stage, aged between 48-73 years on a weight reduction programme at VLCC healthcare center, Colombo 07, were selected for the study. Subjects were evaluated at baseline for initial weight (kg), height (cm), waist and hip circumference (cm) and body composition (Inbody- 230, Digital Version 230DMC) according to a standard procedure for three months. Participants were given an individual diet plan (7- day diet diary) according to the daily calorie requirement and a physical activity plan (4 times/ week, 30mintues) during the programme. Fat mass and weight changes were analyzed using two sample t- test.

Results: Mean body mass index of the participants was 29.79±2.88 kgm^{-2}. Waist hip ratio varied from 0.9 to 1.11. Mean weight reduction was 2.75±0.18kg/month and average fat reduction was 2.37±0.21kg/ month. No significant difference was observed in fat mass changes with the weight reduction ($p>0.05$). Most importantly, body water level and lean muscle mass had improved significantly with an improvement in health status such as blood pressure and diabetes.

Conclusions: Effective weight reduction and body fat mass changes in post menopausal overweight women were observed to have a profound effect on their health. This will help to implement an education programme which could support sustainable life style changes around menopause.

PP 77

RELATIONSHIP OF SERUM FASTING INSULIN WITH GONADOTROPINS IN INFERTILE WOMEN

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Background and objectives: Infertility has become a global health problem in the world wide affecting 8-10% of couples. Increased levels of insulin have been implicated as a cause of infertility. To find out the association of fasting serum insulin level with gonadotropins in infertile women.

Methods: This cross-sectional study was conducted in the Department of Physiology, Dhaka Medical College, from July 2010 to June 2011. A total number of 150 females age ranged from 20 – 40 years were included in this study. Of them, 100 infertile women were selected as study group (group B). Group B was subdivided into group B1 and B2. Group B1 consisted of 50 primary infertile women and group B2 consisted of 50 secondary infertile women. The remaining 50 age matched apparently healthy fertile women were considered as base line control group A. The control subjects were selected by personal contact. Serum fasting insulin, serum FSH and LH, fasting blood glucose and blood glucose two hours after breakfast were measured. Statistical analyses were done by unpaired Students "t" tests by SPSS program version 12.

Results: In this study, the mean fasting serum insulin levels were significantly higher in infertile women than in fertile women ($p<0.001$). Again, serum FSH and LH levels were significantly lower ($P<0.0001$) in infertile women than in fertile women.

Conclusions: Fasting serum insulin level was higher in infertile women than in healthy fertile women.

PP 78

ASSOCIATION BETWEEN BODY MASS INDEX AND DYSMENORRHOEA AMONG UNDERGRADUATES

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Background and objectives: Several studies have shown an inconsistent association between dysmenorrhoea and BMI. Dysmenorrhoea is closely associated with polycystic ovarian syndrome. Dysmenorrhoea interferes with daily activities and is a common complaint among adolescents and young adult females. The objectives of the study were to describe the age at menarche and the association between Body Mass Index (BMI) and dysmenorrhea among undergraduates of the University of Sri Jayewardenepura (USJP).

Methods: A descriptive cross sectional study involving 400 first and fourth year undergraduates of all four faculties of USJP was carried out in 2011. A pre tested self-administered questionnaire validated to assess dysmenorrhoea was given to students after obtaining verbal consent. Data on socio demography, age at menarche, proportion that experienced dysmenorrhea, height and weight of undergraduates were collected. Data was analyzed using SPSS version 15.

Results: The majority of the study populations were in the age group 21 -23 years. Mean age at menarche was 12.9years ± 1.3SD (range 8-16 years). BMI was categorized as underweight (<18.5), normal (18.5 -24.9), overweight (25 -29.9) and obese (>=30). Undergraduates who were underweight normal, overweight and obese were 109 (27.2%), 230(57.5%), 32(8%) and 29(7.2%) respectively. Students of all BMI ranges showed a similar distribution of dysmenorrhea namely, 82.6% (90/109) underweight, 73.9% (107/230) normal, 75% (24/32) overweight and 86.2% (25/29) obese. There was no statistically significant difference in the prevalence of dysmenorrhoea and the BMI categories among the undergraduates ($\chi 2 = 4.62$, df= 3, $p = 0.201$).

Conclusions: More than three quarter (77.3%) of undergraduates experienced dysmonorrhoea. There was no significant association between dysmenorrhea and BMI categories.

PP 79

DYSMENORRHOEA; COMMON SYMPTOMS AND COPING STRATEGIES AMONG UNDERGRADUATES

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Background and objectives: Dysmenorrhoea interferes with daily activities and is a common complaint among adolescents and young adult females. The objectives of the study were to describe the common symptoms and coping strategies used during menstruation by undergraduates of University of Sri Jayewardenepura (USJP)

Methods: A descriptive cross sectional study involving 400 first and fourth year undergraduates of all four faculties of USJP was carried out in 2011. A pre tested self-administered questionnaire was given to students after obtaining verbal consent. Data on socio demography, proportion that experienced dysmenorrhea, common symptoms and coping strategies were collected and analyzed using SPSS version 15.

Results: The majority of the study population was in the age group 21 -23 years. Most females 77.3% (309/400) experienced dysmenorrhea and majority 159 (51.5%) on the first day of menstruation. Common physical symptoms were abdominal pain (90.6%), backache (59.5%), tiredness (52.4%) and muscle pan (43%). Irritability was the most common psychological symptom. Paracetamol was the most commonly used pain reliever (88.4%). Symptoms of abdominal pain, muscle pain, breast pain and feeling faintish were statistically significant physical symptoms among students of all four faculties ($p<0.05$). A significant proportion (66%) of fourth year students suffered from breast pain compared to 17.6% of first year students ($p<0.0001$). Tension and irritability were statistically significant psychological symptoms among fourth year students compared to first year students ($p<0.003$, $p<0.035$).

Conclusions: Physical and psychological symptoms were more common among fourth year students. Usage of western medicine was the the most common coping strategy among all dysmenorrhoea students.

PP 80

KNOWLEDGE, ATTITUDES AND PRACTICE OF EMERGENCY CONTRACEPTIVES AMONG EMPLOYEES WORKING IN IT COMPANIES IN COLOMBO, SRI LANKA

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Background and objectives: The aim of this study was to measure and analyze knowledge and attitudes about emergency contraception.

Methods: A randomly selected sample was taken. A self administered questionnaire was completed by a sample of 227 IT graduates working in leading companies in Colombo. The employees who refused to provide data were excluded. The data was analyzed using SPSS for windows version 16.0.

Results: Of the total, 189(83.25%) were males and 38(16.74%) were females. Of all men (n=189), 51.32% of the men were between 20-30 years, 25.92% were between 31-40 years, and 22.75% were >40 years. Of all females (n=38), 57.89% of the females were between 20-30 years, 23.68% were between 31-40 years, and 18.42% were >40 years. Of the total, 126(55.50%) were married and 101 were unmarried. Of the total, 140 (59.9%) were sexually active. Of all, 167(73.56%) had heard about emergency contraception. About 128 (76.64%) of them had heard about the emergency contraceptive pill(Postinor 2) , about 35(20.95%) had heard about using an oral contraceptive pill ,1.79% had heard about using IUCD as an emergency contraception and only 1(0.59%) had heard of all three of them. The general level of awareness of emergency contraceptive pills was 53.0%. However, knowledge of the general features of emergency contraceptive pills was low and misinformation was high. Up to 43.17% believed that emergency contraceptive pills were unsafe. Those with adequate knowledge generally showed favorable attitudes with regards to emergency contraceptive pills (56.83%). 155(68.28%) had used emergency contraceptive pills themselves or had a partner who had used them.

Conclusions: This study demonstrated a lack of awareness, knowledge and utilization of emergency contraceptives among IT graduates.

OP 81

MORPHOMETRICAL VARIATION OF PROSTATE GLAND IN PATIENTS WITHOUT LOWER URINARY TRACT SYMPTOMS- AN ULTRASONOGRAPHIC STUDY

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Background and objectives: To establish a correlation between normal prostate measurements with age and body surface area (BSA). To establish age related normal Sri Lankan prostate values with a view to diagnose Benign Prostatic Hyperplasia (BPH) in Sri Lankan setup and to compare them with western values.
Methods: Ultrasonographic(US) measurements of prostate gland (Height, Length, width, volume) were done in 102 patients who underwent US scans of the abdomen for non prostatic problems, after carefully inquiring about their present and past urinary problems.
Results: Average age was 45.75±14.92 years ranging from 16 to 85. Mean prostate volume was 19.14ml ± 7.81(Western value (WV) - 31.4ml) and ranged from 6.10 to 55.65ml. Mean prostate height, length and width were 2.89cm±0.46, 3.47cm±0.46 and 3.41cm±0.40 respectively. Spearman's correlation of prostate volume with age was strongly significant (0.586, p<0.001). Spearman's correlation of prostate gland's height (0.466,p<0.001), length(0.459,p<0.001) and width(0.453,p<0.001) were also strongly significant. The volume of prostate didn't correlate with weight (p>0.1), height (p>0.1) and BSA (0.033, p>0.1) of the individual. Patients were grouped in 10 year periods ranging from 20s to 80s. The mean prostate volume below 30 years was 13.45ml±3.84 which rose upto 24.03ml±5.59 (WV-32.8ml) in individuals more than 80 years. Peak mean prostate volume was 25.25ml±11.58 (WV-32.9ml).
Conclusions: Prostate volume positively correlates with advancement in age but does not correlate with weight, height or BSA of the individual. The prostate volume in the Sri Lankan population was significantly lower than the reported western values.

PP 82

CHANGES IN RED CELL INDICES AND SERUM FERRITIN AS MARKERS OF HEMOGLOBIN IMPROVEMENT IN PAKISTANI PREGNANT ANAEMIC WOMEN, RECEIVING VARYING ORAL IRON SUPPLEMENTS

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Background and objectives: To asses the changes in red cell indices & serum ferritin as markers of Hemoglobin improvement in response to different oral iron supplement regimen in pregnant anaemic women.
Methods: In this randomized clinical trial, 126 pregnant anaemic women with mean age 28.37±1.20, 28.9 ±1.15 & 27.97±1.20, mean parity 2.93±0.28, 2.97±0.26 & 2.47±0.21 in 20-24 week of gestation were selected. They were randomly assigned to one of the three-treatment groups at registration (group1, 60mg iron daily; group II, 60mg iron twice weekly and group III, 120mg iron weekly). All physical parameters were assessed at baseline & hematological parameters including haemoglobin (Hb), red blood cell count and haematocrit(Hct), red cell indices and serum ferritin were evaluated at registration & 4-week intervals for 12 weeks after supplementation.
Results: All groups had significant improvement in Hb & red cell indices at the end of therapy. Mean values of Hb: 11.79±0.12 (P<0.001) with % change 24.5% in group I, 11.72±0.14 (P<0.001) with % change 24.2% in group II, 12.13± (P<0.001) with % change 29.5% in group III. Mean values of MCV: 92.36 ±0.25 (P<0.001) with percentage change 10.2% in group I 92.21±0.46 (P<0.01) with percentage change (14.07%) in group II and 91.79± (P<0.001) with percentage change (7.91%) in group II. Mean values of MCH: 29.3±0.2 (P<0.001) with % change 14.1% in group I, 28.78±0.17 (P< 0.001) with % change12.8% in group II and 28.93±0.22 (P<0.001) with % change 13% in group III. Mean values of MCHC: 31.74±0.19 (P<0.01) with % change 3.92% in group I, 31.70±0.32 (P<0.001) with % change 5.02% in group II and 31.55±0.16 (P<0.001) with % change 5.02% in group III.
Conclusions: The present study concluded that the changes in red cell indices & serum ferritin can be used as most valuable indicators of hemoglobin improvement to evaluate the impact of different supplementation programs during pregnancy.

PP 83

EFFECT OF CONSUMPTION OF RED PARBOILED RICE ON LIPID PROFILE AND THE BMI

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Background and objectives: To determine the effects of consumption of red raw rice (RR) and red parboiled rice (RP) on the BMI, blood pressure, lipid profile, in type 2 diabetes mellitus (DM) patients.

Methods: A total of 69 DM patients from Welikada prison comprising, 52 males and 17 females (mean ages 52 and 46yrs respectively) were recruited to the study on a volunteer basis by way of an advertisement and obtaining written informed consent. The dietary habits, exercise patterns and presence of complications were assessed by an interviewer administered questionnaire. Subjects were given RR in the first four months and RP in the next four months. Body weight, height, Systolic and diastolic blood pressure were recorded monthly and LDL-cholesterol, HDL-cholesterol, triacylglycerol, total cholesterol (TC) and TC/HDL ratio were determined at the beginning and at four monthly intervals. Paired t-test was used to compare above parameters during the period of consuming RR and RP.

Results: Mean body weight (p=0.002), BMI (p=0.001) TC (p= 0.004) and TC/ HDL ratio was significantly lower (p=0.005) during the consumption of RP rice compared to RR rice. There was no significant difference in the other parameters assessed.

Conclusions: Consumption of red parboiled rice for duration of 4 months lowers the BMI, TC and TC/ HDL. This variety of rice can be recommended for diabetics since lowering of BMI improves the insulin sensitivity and lowering of TC and TC/ HDL reduces microvascular complications.

PP 84

PREVALENCE OF METABOLIC SYNDROME CHARACTERISTICS AMONG MIDDLE AGED POPULATION IN PANNALA AREA: IMPLICATION WITH DIET AND PHYSICAL ACTIVITY

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Background and objectives: In Asia, metabolic syndrome is growing into a significant public health problem. Immense information accumulated on relations between diet and components of metabolic syndrome. This study aimed to determine the association between metabolic syndrome characteristics and dietary risk factors in a apparently healthy middle aged population.

Methods: 52 apparently healthy people of 35-55 years (sex ratio 1:1) were recruited. Anthropometry, fasting plasma glucose, glycated haemoglobin concentration and fasting lipid profile were assessed. Dietary intake and physical activity level were measured using semi-quantitative food frequency questionnaire and International Physical Activity Questionnaire respectively.

Results: Plasma total cholesterol had significant positive correlations with BMI (r =0 9; p =0 025), waist: hip ratio (r =0 947; p =0 010) and percentage of energy from saturated fat (r = 0 8; p =0 027) after adjusting for age, sex and physical activity level. BMI (r= 0 3; p=0 046), percentage energy from fat (r =0 083; p =0 033) and saturated fat (r =0 083; p =0 022) were positively associated with triacylglycerol level. Stepwise multiple regression analysis showed that physical activity level had significant negative association with triacylglycerol (^{2} = -18 9; p =0 006) and fasting plasma glucose (^{2} = -1 2; p =0 047) levels. Systolic blood pressure positively associated with total cholesterol level (^{2} =0 7; p =0 020). There was no statistical significant association between HbA1c and dietary factors.

Conclusions: In conclusion, the study population had significant associations between dietary factors and metabolic syndrome characteristics defined using WHO clinical criteria for metabolic syndrome (anthropometric and biochemical). Physical activity strongly associated with lowering the risk of developing metabolic syndrome components.

PP 85

WEIGHT, LIPOPROTEIN PROFILE, AND DIETARY BENEFITS AFTER SIX MONTHS OF A COMMERCIAL WEIGHT LOSS PROGRAM AMONG URBAN POPULATION

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Background and objectives: To determine the effect of commercial weight loss program on weight, lipoprotein profile, and eating habits after 6 months of participation.
Methods: A total of 150 overweight or obese women (n=96) and men (n=54) with a mean age of 42.23 ± 2.78 (SD) years and a mean BMI of 34.00 ± 6.66 kg/m^2 were randomly selected from the company's list of clients. The program consists of a dietary modification plan and a behavioral modification plan focused primarily on cognitive restructuring. The changes in weight, lipoprotein profile and dietary habits between the baseline period and the 6^{th} month were analyzed. The lipoprotein profile was analyzed according to the Randox manual (2004).
Results: At baseline, weight, total cholesterol, LDL cholesterol and HDL cholesterol were 85.3 ± 18.2 kg (mean ±SD), 200.7 ± 19.3 mg/dl, 106.3 ± 9.8 mg/dl and 55.0 ± 4.0 mg/dl respectively. Participants who completed the 6 months weight loss program lost an average of 11.0 kg, ± 4.3, ($p<0.05$) and decreases in total cholesterol (-10.0 ±7.8,$p<0.05$) , LDL cholesterol(-4.6±3.5,$p<0.05$) and increase in the HDL cholesterol(+4.2 ± 2.3,$p<0.05$) were statistically significant. These plasma lipid changes decreased the total cholesterol / HDL cholesterol ratio. Based upon self–entered Food Frequency Questionnaire (FFQ), Participants at 6 months were taking significantly higher intake of fruits, vegetables, whole-meal grain products, and pulses with fewer sweets and carbonated beverages.
Conclusions: This weight loss program provides evidence that significant amount of weight loss can be achieved mainly through dietary and behavioral modification. Both weight loss and dietary modification are associated with an improved plasma lipid profile.

PP 86

PHYSICAL ACTIVITY, DIETARY PATTERNS AND BODY MASS INDEX (BMI) OF GRADE 10 AND 11 STUDENTS IN AN URBAN SCHOOL IN SRI LANKA

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Background and objectives: To assess the association between level of physical activity, dietary habits and Body Mass Index (BMI) of grade 10 and 11 students in an urban school in Sri Lanka. To determine body mass index (BMI), to assess physical activity levels and to compare physical activity levels in relation to their BMI.
Methods: A total of 151 students, 85 (56.3%) girls and 66 (43.7%) boys underwent anthropometric measures of height and weight to calculate BMI and provided self-reported questionnaire of physical activity and dietary behaviours. Questions for physical activity were taken from the modified IPAQ [International Physical Activity Questionnaire], 2002. Age specific BMI cut offs for normal BMI data was obtained from reference growth charts of the Ministry of Health, Sri Lanka (Fernando, Senathilake, et.al., 2004, Hettiarachchi, Liyanage, et al., 2006). Height was obtained to the nearest millimeter with bare feet with students standing upright using a plastic measuring tape with a precision of 0.1cm.(A stadiometer could not be use due to practical issues like portability and easiness to use) Weight was measured to the nearest kilogram, using a portable bathroom scale with a precision of 0.1 kg. Dietary behaviours were assessed by dietary recall method on regular dietary patterns. Associations between variables were assessed by comparing the percentages of different categories
Results: The mean BMI was higher among girls (18.3kgm^{-2}) than boys (18.0kgm^{-2}). 80% of students had their BMI within normal range. Physical inactivity was greater in girls (75%). Television viewing and computer usage tended to be high (72%) among students. Sedentary physical activities were associated with a higher BMI level.
Conclusions: The mean BMI was higher among girls (18.3kgm^{-2}) than boys (18.0kgm^{-2}). Prevalence of physical inactivity was higher among girls. There was an association between obesity and sedentary physical activity.

PP87

A GENETIC STUDY ON MUSCLE POWER-BASED PERFOMANCE IN SWIMMERS – A COMPARATIVE STUDY

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There is an increasing evidence for strong genetic influences on athletic performance. The alpha-actinin 3 gene is one of the contributing genes in the determination of muscle fibre type composition and athletic status.
The aim of the present study was to analyse the distribution frequency of the ACTN3 gene amongst controls and swimmers and also studies the association of ACTN3 genotypes with muscle fibre typing.
The study group was divided into two; 35 swimmers and 70 controls of 15-18 years with no fixed sex distribution. ACTN3 testing from cheek swabs and assessment of muscle fibre composition were conducted on both groups. Human Ethical Committee clearance was obtained. Informed consent was obtained from the study group and parents as well. Data was statistically analysed using graph pad prism version 5.
On studying the distribution of the various genotypes of ACTN3, we concluded that the R allele was associated with elite swimming performance. Thus the ACTN3 testing could be promoted for choosing an appropriate sport carrier.

PP 88

PERCEPTION OF BASIC MEDICAL SCIENCE TEACHERS ON UG OSPE IN A MEDICAL INSTITUTE

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Background and objectives: Objective structured practical examination (OSPE) has been practiced in our UG curricula. However, its utility has been questioned by many teachers. We investigated the teachers' perception on OSPE.
Methods: We asked basic medical science (BMS) teachers (n=24) using a questionnaire having both open and closed ended questions on their perception on OSPE.
Results: Almost all the teachers (22/24) believed that OSPE assesses the student's skill domain. Majority of them (17/24) believed that 5-min to each OSPE station is sufficient. However, they (11/24) were against the giving students a gap between OSPE exams, neither they (14/24) favored rest station among many OSPE stations. Majority of them (21/24) opined that students must perform some procedures during practical exams, which has declined over the years. Regarding viva as an station, many (11/24) of them supported the ongoing structured fixed number of questions to all the students. Other gave mixed responses: varying number of questions with respective weights. Nevertheless, majority (16/24) of BMS teachers rated current OSPE+viva as satisfactory. Their major suggestions were: careful question framing directly linking with the practical, and having some liberty for examiners with alternative reserve questions so that bias across the teachers' is minimized and question uniformity is maintained. However, students' opinion is equally important to explore the issue further as some suggested.
Conclusions: The well-framed OSPE directly linking with the practical exercises is a fairly good tool to assess students' skills. It is better to have some working stations as well.

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