Abstracts of Award-Winning Posters, 17th Annual Health Sciences Poster Conference, Faculty of Medicine, Health Sciences Centre, Kuwait University, Kuwait, May 8–10, 2012

Dr. Nael Al-Naqeeb Undergraduate Research Award

1 The Acute Effect of Shisha Smoking on Oxygen Saturation Level and Heart Rate
A. Al-Osaimi, O. Obaid, Y. Al-Asfour, A. Yousef, M. Razouki, S.H. Rajab
Department of Community Medicine, Faculty of Medicine, Kuwait University, Kuwait

Introduction: Previous studies have shown that shisha smoking is associated with chronic health problems. However, very few studies have addressed the acute effects of shisha smoking, such as oxygen saturation and heart rate. The aim of this study was to assess the acute changes in oxygen saturation and heart rate following shisha smoking. Methods: This concurrent cohort study enrolled 220 shisha smokers from 22 shisha houses in Kuwait. Personal data were collected using questionnaires. Oxygen saturation and heart rate were measured at baseline (using a handheld oximeter) and at 30 min after initiation of shisha smoking. The main outcome variables were change from baseline in oxygen saturation and heart rate. Results: Compared to baseline, oxygen saturation decreased by 0.39% (p < 0.001). The only variables associated with change in oxygen saturation (more than 2% decrease) after adjustment for age and gender were asthma (OR = 3.4, 95% CI = 1.3–9.3) and history of smoking (OR = 2.4, 95% CI = 1.02, 5.7). Heart rate increased from baseline by an average of 15 bpm (p < 0.001). Factors associated with increase in heart rate (>15 bpm) after adjustment included male gender, younger age, frequent shisha smoking, and change in head weight >4 g. A minority of participants (6.4%) had a very large increase in heart rate (>50 bpm), and 8 (3.6%) participants had a heart rate over 200 bpm after 30 min of shisha smoking. Conclusions: Shisha smoking was significantly associated with an increase in heart rate and a decrease in oxygen saturation. Extreme increases in heart rate were found in a small group of participants, suggesting that some shisha smokers may be vulnerable to the sympathomimetic effects of shisha smoking.

2 Levosimendan Improves Cardiac Recovery from Ischemia in Diabetic and/or Hypertensive Rat Models
A. Al-Turki, I.F. Benter
Department of Pharmacology and Toxicology, Faculty of Medicine, Kuwait University, Kuwait

Introduction: Levosimendan is a calcium-sensitizing drug that also has vasodilating properties through the opening of potassium-ATP channels. The aim of this study was to determine if levosimendan given during perfusion before ischemia or during reperfusion would produce protection against ischemia-reperfusion (I/R)-induced cardiac dysfunction in control, diabetic, hypertensive and diabetic-hypertensive rats. Methods: Diabetes was induced by intraperitoneal injection of 55 mg/kg of streptozotocin to WKY or SHR hypertensive rats. Hearts were removed from control, diabetic, hypertensive and diabetic-hypertensive rats, mounted on Langendorff apparatus and perfused at a constant pressure of 50 mm Hg with an oxygenated Krebs-Henseleit buffer. Left ventricular contractility and coronary flow were continuously monitored. The hearts were perfused for 30 min and then subjected to 40 min of no-flow global ischemia followed by 30 min of reperfusion. Levosimendan was given either during perfusion before ischemia or during reperfusion. Results: Levosimendan significantly improved cardiac recovery after I/R in control, diabetic, hypertensive and diabetic-hypertensive rats in all parameters studied. Most improvement was observed in diabetic-hypertensive rats: 100 and 130% improvement in left ventricular developed...
pressure and \(dP/dt_{\text{max}}\) respectively, and 700% improvement in coronary flow; improvement was more prominent when levosimendan was given during reperfusion. **Conclusions:** Levosimendan significantly improved cardiac left ventricular contractility and hemodynamics after I/R especially in the diabetic-hypertensive rats and must be considered in the treatment of myocardial ischemic attacks.

**Best Postgraduate Awards**

1. **Graduate MSc**

**A Genetic Association Study of Angiotensin-Converting Enzyme Polymorphisms and Essential Hypertension in the Kuwaiti Population**

M. Al-Ahmad, S.A. Al-Bustan, K. Al-Qattan

Department of Biological Sciences, Faculty of Science, Kuwait University, Kuwait

**Introduction:** Angiotensin-converting enzyme (ACE) is a vital component of the renin-angiotensin system, a key regulator of blood pressure. This study aimed to investigate the association of specific ACE polymorphisms (ACE I/D, ACE6 and ACE8) and risk factors with essential hypertension in the Kuwaiti population. **Methods:** DNA samples were extracted from whole blood collected from 154 Kuwaiti essential hypertensive patients and 115 normotensive Kuwaiti controls matched based on gender and age. Genotyping of the ACE polymorphisms was done using allele-specific PCR and PCR-restriction fragment length polymorphism where the products were used to construct haplotypes. The Hardy-Weinberg equilibrium and linkage disequilibrium were performed on the genotype and allele frequencies and statistical analysis including logistic regression was used to investigate the association of ACE polymorphisms with hypertension and its associated risk factors. **Results:** All allele and genotype frequencies were found to be in Hardy-Weinberg equilibrium and linkage disequilibrium; however, they did not show direct segregation with hypertension. A significant association \((p < 0.05)\) was observed between the ACE polymorphisms and family history of hypercholesterolemia where the frequency of the ACE I/D II genotype was found to be 38.9% followed by the ACE6 CT genotype (27%) and then by the ACE8 GG genotype (32.2%). Logistic regression analysis of ACE8 genotypes showed a strong association with hypercholesterolemia \((p = 0.005)\), whereas the ACE6 polymorphism revealed a significant \((p < 0.05)\) increase to the risk of essential hypertension and other variables such as family history of hypertension where the increased risk was threefold. **Conclusions:** This study suggests that ACE polymorphisms could be related with the increased risk for essential hypertension in the Kuwaiti population. It is strongly recommended that a larger sample size and other polymorphisms and factors be investigated to assess the genetic predisposition to develop essential hypertension.

Funding agency: Kuwait University Graduate School.

2. **Resident**

**Eye-Opening Look at Eye Makeup Hygiene: Practice, Risk Factors, Ocular Symptoms and Microbiological Evidence**

W. Alsaadoun, M. Bouhaimed

**Introduction:** Blepharitis is the most common chronic condition seen by ophthalmologists in which the eyelid margins get inflamed secondary to excess growth of bacteria, blockage of the eyelid’s oil glands, and allergies. There are many systemic and lo-

**Eye-Opening Look at Eye Makeup Hygiene: Practice, Risk Factors, Ocular Symptoms and Microbiological Evidence**

W. Alsaadoun, M. Bouhaimed

**Introduction:** De novo and acquired resistance to antiestrogens is a serious problem in therapy of estrogen receptor (ER)-positive breast cancer. To study endocrine insensitivity, we have established several ER-depleted cell lines by shRNA transfection of MCF7 cells that have thereby acquired a mesenchymal phenotype. In this study, we examined the motile behavior of these and ER-expressing lines in response to a change in extracellular pH, as this is thought to be altered by tumor metabolism and may affect dispersion. **Methods:** Cells grown on several substrata were maintained at pH 7.4 in CO₂-buffered medium and then transferred to conditions of pH 8.3 and effects observed microscopically over 10–60 min. Time lapse photography was utilized to continuously monitor cell behavior and effect of returning cells to pH 7.4. Effect of drugs was assessed by addition at least 1 h prior to pH shift. Photomicrographs were analyzed using Adobe Photoshop measuring tool and differences were assessed by Student’s t test. **Results:** ER downregulated transfected cells exhibited reversible scattering/shrinking in response to increased extracellular pH; cell retraction from adhesion substratum (uncoated tissue culture dishes, fibronectin or collagen), shrinkage of cytoplasm and rounding-up were observed, with cell polarization and decreased clustering. Cells resumed normal appearance when returned to pH 7.4 for >70 min. This shrinking/scattering effect was partially prevented by an Na⁺/H⁺ antiport inhibitor but not by glucose uptake inhibitors. Change in pH had no effect on morphology of parental or transfected MCF7 cells that remained ER-positive, or of normal breast line HBL100 or the ER-negative tumor-derived MDA-MB231. **Conclusions:** Loss of ER makes breast cancer cells susceptible to pH-induced morphological changes that could play an important role in tumor metastasis. This suggests possibilities for novel drug targets.

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tical risk factors associated with this high prevalence. In this study, we looked specifically at the risk factors associated with eye makeup (mascara) hygiene. Most women use eye makeup to a certain extent and knowledge of their potential harm can be an eye-opener. **Methods:** A cross-sectional study including 50 female students at the Health Science Centre was conducted using a questionnaire and microbiological analysis of their eye mascara. Swabs from the brush of the mascara were taken using sterile swabs and were sent to the laboratory using biohazard bags. Gram kits for staining, catalase and coagulase tests were used. Inoculation and subcultures onto different agar plates were done using sterile disposable loops. The analytical profile index was used for staphylococcus identification. Finally, the Kirby-Bauer disk diffusion method was used to detect bacterial sensitivities. **Results:** There were 14 positive cultures of bacterial growth (28%) with *Staphylococcus epidermidis*, *S. aureus*, *S. xylosus*, and diphtheroids. In practice, 86% were using mascara older than 1 month, 54% were sharing their mascara, and only 58% always remove their eye makeup. Interestingly, 32% were using false lashes (ranging from 1 day to 1 year). Ocular symptoms ranging from red eyes to photophobia were present to a variable degree. Current irritation from dust or smoke is correlated with having positive mascara cultures (p = 0.004). Contact lenses were used by 32 participants (11 with positive cultures). **Conclusions:** Despite the small sample size and the participants’ background, transferring bacteria back and forth from the eye into the mascara tube was evident with many associated risk factors.

## Case Report Award

### Acute Abdomen and Schistosomiasis

**M. Alkandari**, **A. Hamza**, **M. Zayed**, **T.A. Junaid**

Departments of **Pathology**, **Surgery**, and **Radiology,** Mubarak Al-Kabeer Hospital, Kuwait

**Background:** Schistosomiasis is one of the most common and widespread parasitic infections worldwide particularly among certain geographical areas and populations. *Schistosoma mansoni* is one of many trematode parasites of schistosomiasis. The majority of infected patients do not present as acute emergency but usually as a consequence of chronic infestation and the effect of inflammatory reaction to the Schistosoma ova in tissues and organs. We present what we believe to be a very unusual case of acute mesenteric ischemia leading to gangrenous jejunum caused by *S. mansoni* infection. **Case Summary:** A 27-year-old Egyptian male, not known to have any previous medical history, presented to the emergency department with acute abdomen. He gave a history of 4 days of deteriorating persistent abdominal pain which was associated with vomiting, constipation, and passing black stool. CT scan showed totally acutely thrombosed superior mesenteric vein. Exploration laparoscopy revealed a gangrenous small bowel loop. The procedure converted to laparotomy with resection of the diseased bowel segment. Many Schistosoma ova were seen within the excised ischemic jejunum as well as thrombosis within the mesenteric vessels with adult *S. mansoni* worms nearby in the veins. **Conclusion:** This is a very unusual case of schistosomiasis presenting as an acute abdomen with acute mesenteric ischemia and gangrenous jejunum. The exact pathogenesis of *S. mansoni* worm triggering intravascular thrombosis is not fully understood. This case leaves us with a greater perception of the variety of ways that schistosomiasis may present especially in patients from areas where Schistosoma is prevalent.