At UMKC School of Medicine, we encourage our medical students to be involved in research in addition to their regular course load and rotations. Every year in April, these students have the opportunity to present the data of their research. Many students also have the privilege of presenting at various national conferences, such as the American Society for Microbiology, International Colloquium on Lung Fibrosis, American Heart Association and the Federation of American Societies for Experimental Biology.

WE APPLAUD THESE STUDENTS FOR THEIR HARD WORK!

For more information on student research or to find archives of this year’s presenters, please visit: www.med.umkc.edu/research/students

Or contact:
Office of Research Administration
Room M1-301
816.235.6687
somresearch@umkc.edu

Director of Student Research,
Professor of Pathology,
Pharmacology & Anesthesiology
Agostino Molteni, MD, PhD
Room M3-C12
816.235.5604
MolteniA@umkc.edu
Welcome to the 2011 episode of Student Research Day at the University of Missouri-Kansas City School of Medicine. This event is a forum for presenting the results of biomedical research involving students and their mentors. The University of Missouri-Kansas City School of Medicine puts strong emphasis on research as a component of the overall education of its students, and this day’s events celebrate the accomplishments of these dedicated individuals. The broad array of projects reflects the breadth and depth of faculty interests in research that better our understanding of function and disease in all populations. Our students are able to select from a large group of faculty mentors in basic and clinical departments throughout the School of Medicine and our affiliated programs. Future advances in all aspects of medicine—diagnosis, treatment, prevention, community health, and delivery of first quality care—can only come from well-designed and executed research. Thus, we are proud to be a part of Student Research Day and the bright future for community-focused medical care that will result from these projects.

Betty M. Drees, MD, FACP
Dean and Professor of Medicine

Travis Solomon, MD, PhD
Associate Dean of Research

I am so proud that the Alumni Association has become intimately involved in Student Research Day. We are thrilled to honor you, our future alumni! The breadth of your work and the value of your research is astounding. You will surely go far in your careers and advancing the health of your community!

Congratulations on your accomplishments. They are well deserved. The Alumni Association is hopeful that our partnership will last for years to come and look forward to assisting you in any way possible.

Raymond A. Cattaneo, MD
President – UMKC-SOM Alumni Association

Dr. Ann Bonham directs AAMC programs that support research and training, addresses policy issues through engagement with key public and private sector officials, works closely with constituents to address their research needs, and represents the association on a national stage regarding research policy and administration.

Raymond A. Cattaneo, MD
President – UMKC-SOM Alumni Association
The Student Research Program of the University of Missouri-Kansas City School of Medicine is pleased to present the 2011 Student Research Awards in the name of Loredana Brizio Molteni, MD, FACS, a former faculty member and wife of Student Research Director Agostino Molteni, M.D., Ph.D.

Loredana Molteni died on June 30, 2009, following a lengthy illness. Much of her time as an assistant professor of surgery at the UMKC School of Medicine was dedicated to supporting her husband’s research efforts at the School. In addition, she maintained a successful private practice in Kansas City.

She received her medical degree and specialty board in general surgery from the University of Bologna in 1951, and became the first woman ever appointed to a tenure track position at the University of Bologna’s Department of Surgery. She was one of just six women out of more than 400 candidates inducted into the American College of Surgeons in 1970.

Throughout her career, Loredana Molteni served as an assistant professor of surgery at Roswell Park Memorial Institute and State University of New York at Buffalo; associate professor of surgery and director of research at the burn center at Loyola University, Chicago; adjunct professor of pathology at Northwestern University; and had another successful private practice in Buffalo, N.Y.

Forty years of collaboration between Loredana and Agostino Molteni resulted in the editing of two books, the publication of nearly 90 articles and book chapters, and almost 150 presentations at national and international meetings.
Evaluation of a novel HIV and STD prevention program on adolescent knowledge and risk behaviors

Purpose:
To evaluate a novel HIV/STD adolescent education program. The objective was to assess whether participation in the program was associated with 1) increased knowledge regarding HIV and STD transmission prevention and 2) a reduction (or delay in intention to participate) in sexual transmission behaviors.

Methods:
300 eighth-grade students who were scheduled to hear the program were asked to anonymously complete a baseline (BL), a post (immediately following) and a 2 week post survey. Demographic data, self reported sexual risk behaviors (or intentions), and HIV/STD knowledge were assessed using the same items with each survey. Student’s t test was used to compare mean baseline and follow-up HIV/STD knowledge and risk behavior scores.

Results:
Among the 236 participants completing the BL survey, the mean age was 13.0 y, 56% were male, 74% were white, 8% black, and 6% Hispanic. 21% reported having had oral, anal or vaginal sex. HIV/STD knowledge increased as the mean score increased from 51% at BL to 83% immediately post and remained increased at 70% 2 weeks post (p’s<0.0001). Student intentions toward number of sex partners, waiting until marriage, and use of condoms did not change from BL to followup (p’s > 0.10)

Conclusion:
This study showed the program is an effective tool for increasing and maintaining adolescent knowledge regarding HIV and STDs. Although participants did not report a decreased intention to engage in sexual risk behaviors, this may be due to the many other environmental factors that impact risk behavior not controlled for in this study.
Magnetic Resonance Isotropic Proton Density Imaging in Children with Developmental Hip Dysplasia Status Post SPICA Casting

Sri Krishna Alapati, MS-IV

PURPOSE:
Various radiologic studies have been used to visualize femoral head relocation in children undergoing spica casting for developmental dysplasia of the hip (DDH). Yet, in certain cases, distinguishing hip anatomy is not possible with a radiograph or ultrasound due to delayed maturation of ossification centers. Status-post closed reduction, it is imperative to anatomically distinguish between a reduced versus non-reduced femoral head, therefore avoiding complications such as avascular necrosis. We developed an isotropic proton magnetic resonance (MR) sequence to evaluate femoral head positioning status post reduction which requires no sedation, can undergo multiplanar reconstruction, and is without radiation risk.

METHODS:
We retrospectively identified nine patients with DDH, between six and eighteen months of age, who underwent MR imaging for developmental dysplastic hips. Status-post closed reduction, it is imperative to anatomically distinguish between a reduced versus non-reduced femoral head, therefore avoiding complications such as avascular necrosis. We developed an isotropic proton magnetic resonance (MR) sequence to evaluate femoral head positioning status post reduction which requires no sedation, can undergo multiplanar reconstruction, and is without radiation risk.

RESULTS:
Average scan time was between five to six minutes. All studies involved required no sedation and identified femoral head location without artifact. Both radiologists and the orthopedic surgeon were strongly confident and at agreement with femoral head location relative to the acetabulum in all cases.

CONCLUSION:
Utilizing a three dimensional isotropic proton density sequence will benefit patients undergoing closed reduction of developmentally dysplastic hips as it is a quick imaging modality involving no sedation or ionizing radiation exposure. The sequence provides a confident and accurate interpretation of the femoral head in relation to the acetabulum.

Expression of BCL-6 and Cyclin D Antigens in Human Adenocarcinoma

Ramandeep Babbra, MS-VI | Betty Herndon, PhD, Muhammad Pathan, MD, Cletus Baidoo, MD, Tim Quinn | Mentor: Betty Herndon, PhD

ABSTRACT:
Most colorectal cancers involve gene mutations, and genes upregulated include cyclin D, used as a diagnostic marker for colon carcinoma. BCL-6 is a transcriptional regulator important in lymphocyte survival. Microarrays show that, in colorectal cancer, BCL-6 is 7-fold upregulated compared to controls. IRB approved, so I obtained human colon tissue taken in surgical resection from the TMC Pathology Department, diagnosed as “moderately differentiated adenocarcinoma of colon”. In my research I was looking for what percentage of these diagnosed cases would stain positive for cyclin D and for BCL-6?

Tissue blocks and the surgical pathology report for each of 31 subjects were obtained and given code letters. Antibodies for BCL6 and cyclin D were tested in control tissues and on all sections with antigen baring, secondary and tertiary staining for both markers, n=62. Sections were graded +/- by 2 pathologists, a medical sciences researcher, a pathology resident and a medical student. Surgical pathology data was also summarized for inflammation, mucin, positive nodes and polyp origin. Analysis by ANOVA and post-tests included: BCL-6 positive, cyclin D positive, both positive, or both negative.

Of the 100% surgically diagnosed cases, BCL-6 was positive in 16% and cyclin D positive in 29%. BCL-6 was significantly related to cases called “mucinous”, p<0.001. When both BCL-6 and cyclin D were present, significant “inflammation” was noted on the report, p<0.01. This study attempted validation of a potential colon cancer biomarker from tissue blocks. A need exists to identify tumor-positive tissue and to predict treatment responsiveness.

Funded in part by Sarah Morrison Award
Sacrococcygeal teratoma with de-differentiation to thyroid cancer

ABSTRACT:
Sacrococcygeal teratomas [SCT] are extremely rare in adults. We present a 65-year-old male with a possible SCT with dedifferentiation into thyroid cancer treated with high level ablation with 202 mCi I-131 NaI. Excellent responses to 131I therapy were obtained, with the need for two additional treatments subsequently. There has only been one previous documented case of possible thyroid carcinoma arising from SCT. This is the first documented case of ablation therapy for such a SCT. The clinical presentation, the histologic diagnosis, imaging findings, and the patients’ clinical outcome are described. A review of the literature on SCT in adults and their treatment is also presented. This case signifies the importance of considering SCT, which often misdiagnosed, in the differential diagnosis for pelvic mass presenting with neurological and/or obstructive symptoms.

Serum 25-Hydroxyvitamin D3 Concentrations and Carotid Artery Intima-Media Thickness Among Children With Multiple Modifiable Atherosclerosis-Promoting Risk Factors

BACKGROUND:
Some literature supports a link between cardiovascular risk and vitamin D deficiency among adolescents.

OBJECTIVE:
To determine whether there is a correlation between serum vitamin D levels and carotid artery intima-media thickness (CIMT), a noninvasive tool for assessment of subclinical atherosclerosis, among high-risk children.

METHODS:
Serum 25-hydroxyvitamin D3 levels were compared to mean and maximum CIMT in 74 high-risk children with multiple modifiable atherosclerosis-promoting risk factors. Vitamin D was used as a continuous predictor variable and was also categorized into three levels (insufficient - < 20 ng/mL, borderline - ≥20 ng/mL and ≤30 ng/mL, and sufficient - > 30 ng/mL). Modifiable atherosclerosis-promoting risk factors included BMI Z score, Systolic blood pressure (SBP), LDL C, Triglyceride (TG), High density lipoprotein cholesterol (HDL), Insulin, & Tobacco smoke exposure history.

RESULTS:
Age 13.7 ± 3.1 years; 45 % Male; 62% White. Vitamin D - 20% Insufficient, 57% Borderline & 23% Sufficient. CIMT mean - 0.48 ± 0.04 mm; CIMT maximum - 0.54 ± 0.06 mm. Mean modifiable atherosclerosis promoting risk factor score was 3.3 ± 1.6. There was no significant association between vitamin D and mean (p= 0.89) or maximum (p= 0.90) CIMT. Multivariative analysis adjusting for risk factor score also did not confirm any association between vitamin D and mean (p= 0.23) or maximum (p= 0.40) CIMT. There was a significant association between SBP and mean CIMT (p=0.04).

CONCLUSION:
Among high-risk children, serum vitamin D levels were not associated with CIMT however, SBP correlated with CIMT.
Analysis of procedural complications from diagnostic and therapeutic catheterizations performed on low birth weight infants ≤ 2.5 kg compared to infants > 2.5 kg

Meghan Chlebowski, MS-VI | Richard Stroup, Stephen Kaine, MD
Mentor: Stephen Kaine, MD

BACKGROUND:
To determine whether cardiac catheterization procedures for low birth weight infants ≤ 2.5 kg carry greater risk of complications compared to procedures for larger infants > 2.5 kg, we reviewed procedural outcomes on both groups at our center.

METHODS:
From 01/03-01/09, 46 infants weighing ≤ 2.5 kg at the time of procedure were identified and compared to a randomly selected 3:1 case control of 136 infants > 2.5 kg. Medical records and angiographies were reviewed. Demographic characteristics, primary diagnosis, type of intervention, fluoroscopy time, contrast volume, pre- and post-BUN/Cr, and all procedural complications were recorded.

RESULTS:
Overall incidence of complications was higher in infants ≤ 2.5 kg compared to infants > 2.5 kg (35% vs 18%, p=0.015) due to a greater proportion of minor complications (35% vs 17%, p=0.011). When minor complications were stratified, there was a greater incidence of hypotension requiring IV fluids in infants ≤ 2.5 kg (7% vs 0%, p=0.015). Infants ≤ 2.5 kg also received more contrast volume (5.2 +/- 2.3 vs 4.6 +/- 1.3 cc/kg, p=0.023) and post-procedure BUN was higher (16.4 +/- 13.4 vs 12.2 +/- 8.5 mg/dL, p=0.039). The percentage of major complications was not higher in the ≤ 2.5 kg group (2.2% vs 2.2%). No procedural deaths occurred.

CONCLUSIONS:
Infants ≤ 2.5 kg were at higher risk for procedural complications during catheterization compared to infants > 2.5 kg. This increased risk was primarily associated with minor complications, particularly hypotension requiring IV fluids. There was no difference in major complications between groups.

Weight Loss in the Newborn Nursery

Jessica Curry, MS-VI | Elizabeth Simpson, MD, Vidya Sharma, MBBS, MPH
Mentor: Elizabeth Simpson, MD

ABSTRACT:
Although weight loss during newborn nursery stays is expected, normative data on the amount of weight loss is limited. Clinical decisions regarding need for breast feeding supplementation or urgency of follow up appointments are often made on individual provider experience rather than evidence. Although these studies have placed infants into risk categories according to feeding method, no studies have quantified the amount or number of formula supplement given to the infants or looked at weight loss in infants less than 48 hours of age. Study specific aims are to determine daily change in weight in healthy term infants from birth until 72 hours of age and assess factors which may impact change in birth weight during routine nursery stays. The study was a single site retrospective chart review of 100 charts. Primary outcome measure was change in weight between birth and discharge. Statistical significance was shown using non-parametric testing regarding numbers of supplemental feedings as well as the method of feeding. The distribution of percent change in weight was the same across categories of gender, mode of delivery, AGA/SGA/LGA, antepartum maternal IV fluid administration. Research concluded that methods of feeding and supplementation are the determining factors which impact the percent of weight lost prior to discharge. Data distribution was markedly skewed with most infants being bottle or breastfed with more than five supplements. Limitations include very few exclusively breastfed infants or infants that received less than five supplemental bottles during hospital stay. Power would be increased with larger sample size.
Novel mechanism of calcium dysregulation after oxidative stress

Neeti M. Desai, MS-VI | R. Scott Duncan, PhD, Jill D. Hilgenberg, Simon Kaja, PhD, Peter Koulen, PhD | Mentors: Simon Kaja, PhD, Peter Koulen, PhD

ABSTRACT:
The pathophysiological mechanism behind many chronic neurodegenerative disorders, such as Alzheimer’s Disease, age-related macular degeneration and retinopathies is linked to alterations in Ca2+ signaling following oxidative stress. The exact mechanisms behind this disturbance of intracellular Ca2+ signaling are not yet known. This study demonstrates a novel mechanism for increased intracellular Ca2+ release in a neuronal cell line after exposure to oxidative stress. By means of quantitative polymerase chain reaction, quantitative immunoblotting, microfluorimetry and the optical imaging of intracellular Ca2+ release, we show that sub-lethal tert-butyl hydroperoxide-mediated oxidative stress results in a selective up-regulation of type-2 inositol-1,4,5-trisphosphate receptors. This effect was seen at the transcriptional, translational, and functional levels, with increased Ca2+ release into the nucleoplasm following a receptor-specific stimulus. Our data shows a novel source of Ca2+ dysregulation induced by oxidative stress, which may be potentially useful for the development of neuroprotective strategies in neurodegenerative disorders. We anticipate that these findings will contribute to advances in pharmacological intervention strategies to combat chronic degenerative disorders of the retina and brain. As these disease conditions affect a significant and increasing portion of the U.S. population, determining causes and potential treatment strategies will contribute to improving health care, health and quality of life. Furthermore, as these diseases disproportionally affect ethnic minorities, our research also directly impacts on eliminating health care disparities these populations are experiencing.

Mesothelioma markers expressed in human cell line exposed to single walled carbon nanotubes

Kathleen Doo, MS-V | Tim Quinn, Betty Herndon, PhD | Mentor: Betty Herndon, PhD

ABSTRACT:
Response of the lung to carbon nanoparticle (CN) exposure has become important as industrial and consumer use increases. Nanofiber chains, created when CN are exposed to the aqueous pulmonary environment, have been compared to asbestos, a known mesothelioma producer. We find that, in pulmonary cell cultures, CN exposure upregulates protein markers reported in some virulent malignancies. To seek pulmonary mesothelioma specificity, we asked: will CN-stressed, untransformed human mesothelial cells secrete markers of mesothelioma? MeT-5A (untransformed human mesothelial) cells were exposed/unexposed to CN. NCI-H28 human mesothelioma cells were the positive control. Two potential endpoint markers were selected: mesothelin (clinical diagnostic mesothelioma assay) and osteopontin (a research mesothelioma marker). A dose-response analysis of CN toxicity demonstrated that the best cell stress level utilized 25 micrograms CN per mL medium, which produced 80% of control viability. Each 3 days, cells and supernatants were flash frozen for testing by ELISA. Cultures were continued for the lifespan of the MeT-5A cells (34 doublings).

Cell culture medium and cell homogenate supernatants showed expression of both markers in the CN-stressed cells but not in controls. Mesothelin averaged 411.7 ng/mL exposed vs. 44.5 unexposed at 48 hr, p<0.001 ANOVA and was detectable until 96 hr. Osteopontin appeared only at 24 hr: 4.44 ng/mL exposed vs 1.1 ng/mL unexposed. NCI-H28 mesothelioma cells released both markers after 16 hr exposure, p<0.001 vs. controls.

Acute CN-induced stress to untransformed human pulmonary mesothelial cells produces changes associated with secretion of mesothelioma markers. Processes involved in these cellular changes remain under investigation.

Funded in part by Sarah Morrison Award
**Lung receptors: The path to lung damage after carbon nanoparticles**

My research rotation involved a study of experimental lung injury induced by intratracheal carbon nanoparticles (CN). The early events were identified by histology: rapid eosinophilia, inflammation, cytokine induction, and resolution over time. My involvement was in the performance of Western blots on rat lung tissue harvested at different times following CN, to identify both soluble and cell bound receptors for the marker of injury, the high mobility box protein-1 (HMGB1).

1 gram lung was homogenized in buffer with protease inhibitors, centrifuged (2400 x g) and the supernatant was ultracentrifuged (100,000 x g) to obtain pellet and soluble fractions which were frozen. Antibodies against the three known/suspected receptors for HMGB1, RAGE, TLR 4 and TLR 9 were obtained. Both pellet and soluble fractions were mixed with standard buffers and separated electrophoretically on precast BioRad gels in BioRad units. The gels were blotted to nitrocellulose and the bands identified by chemiluminescence. Blots were scanned into Image J and density was measured. HMGB1 had been measured in bronchoalveolar lavage by ELISA. We compared the arbitrary band density with the ligand over time.

The following conclusions were made based on Western blots. Concurrent studies used flow cytometry to further identify the HMGB1 ligands.

<table>
<thead>
<tr>
<th>0.5 hr</th>
<th>3 hr</th>
<th>24 hr</th>
<th>4 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLR4 blocks soluble ligand</td>
<td>TLR 4 no effect</td>
<td>TLR4 no effect</td>
<td>TLR4 soluble-high, may block ligand</td>
</tr>
<tr>
<td>TLR9 no effect</td>
<td>TLR9 small block of ligand</td>
<td>TLR9 no effect</td>
<td>TLR9 small block ligand</td>
</tr>
<tr>
<td>RAGE no effect</td>
<td>RAGE binds ligand</td>
<td>RAGE binds ligand</td>
<td>RAGE binds ligand</td>
</tr>
</tbody>
</table>

**Utilizing flow cytometry to determine inflammation-related receptors associated with nanotube-induced lung toxicity**

Flow cytometry consists of a single wavelength of laser light directed onto a stream of fluid containing cells. Cells/particles scatter the light beam as the stream passes through, causing fluorescent chemicals attached to the cell to become excited into emitting light. Both scattered and fluorescent light is picked up by multiple detectors that can analyze several thousand particles every second. The fluorescent chemicals are, for clinical study, bonded to antibodies, which are used to identify the cell surface antigens.

Over 10,000 lung cells were measured for fluorescent intensity on different days after CNT and compared to controls. RAGE receptors significantly increased within the first 24 hours after nanoparticles were given. Toll-like receptors increased 1-4 weeks after exposure.

Flow cytometry is the major technique used to identify cell markers in different diseases, both clinically and in medical research.

We used Children’s Mercy flow cytometer to identify the receptors for an “alarm protein”, HMGB1, released from lung cells when carbon nanoparticles (CNT) are given to rats. We were interested in whether lung cells expressed a particular receptor at different times following the CNT insult. Receptors studied: receptor for advanced glycation end products (RAGE), and toll-like receptors 4 and 9.

Lungs, harvested at different times following nanoparticles, were minced and passed through multiple screens to isolate single cells. Cells were then treated with fluorescent-tagged antibodies vs rat lung cell receptors RAGE, TLR 4 and 9. Control fluorescent antibodies were matched exactly to the antibody specificity, run on duplicate cell samples.
The T2D drug Exendin: hepatocellular effects in an animal model

ABSTRACT:
Non-alcoholic fatty liver disease (NAFLD) is a major clinical problem, often associated with adult onset diabetes. Studies on mice with genetically fatty livers suggested that the glucagon-like peptide (GLP) proteins have a novel direct effect on hepatocyte fat metabolism. Treatment with Exendin-4, a GLP-1 receptor agonist that improves insulin secretion in diabetics, reduced hepatic steatosis and fatty acid synthesis in these mice. The present study was done by Medlab and the TMC GI group with normal rats given fatty livers by feeding a methionine-choline deficient (MCD) diet for 75 days. We measured the effects of Exendin-4 (10µg/day) on MCD vs controls, although this report stresses the effects of Exendin-4 on the fatty liver group only: 2 groups of 10, MCD and MCD + Exendin-4. Pancreases of the animals treated daily with Exendin-4 showed significantly more inflammation and some dying (pyknotic) nuclei. Circulating GLP-1 was lowered by the Exendin-4 treatment in these animals. We conclude that in outbred rats with fatty liver produced by an MCD diet, Exendin-4 fails to show the beneficial NAFLD effects reported in genetically hepatosteatotic rodents.

Sarah Cantreill Jennison, MS-IV | Betty Herndon, PhD, Tim Quinn
Mentor: Betty Herndon, PhD

Cytokines in Lung Following Sterile Damage by Carbon Nanoparticles (CN)

ABSTRACT:
High mobility group box protein (HMGB1) is a key mediator of inflammation following both sterile damage and infection. HMGB1 is a nuclear protein that stabilizes DNA. Intratracheal (i.t.) exposure to carbon nanoparticle (CN) causes HMGB1 to leave pneumocytes rapidly and, bound to a receptor, upregulate lung cytokines. Specific HMGB1-receptor complexes determine anti-inflammatory and pro-inflammatory cytokine responses; both were measured following CN administration. Based on this contradiction, we were interested in which cytokines were up-regulated by CN and which HMGB1-receptor complex was responsible. This study evaluates cytokines in the lung fluids of rats 0.5 hr to 30 d after i.t. CN exposure.

We measured pro-inflammatory cytokines, Interleukin-6 (IL-6) and Tumor Necrosis Factor-α (TNFα), and anti-inflammatory cytokine, Interleukin-10 (IL-10). Corresponding levels of HMGB1 receptors, Toll-like Receptor-4 (TLR4) and receptor for advanced glycation end products (RAGE), were also measured. Rat ELISA kits were obtained for all. I assisted in measuring cytokines in several fluids: Bronchoalveolar lavage (BAL), pleural fluid, plasma, and whole lung homogenate supernatant. BAL was the most sensitive with good protein range.

Overweight Children are at High-Risk for Cardiac Damage Independent of Blood Pressures

**BACKGROUND:**
The relative contributions of body weight and systolic blood pressure (SBP) on left ventricular mass index (LVMI g/m2.7) and left atrium (LAheight mm) in children are ill-defined.

**METHODS/RESULTS:**
2429 children, 10 - 18 years were included. Controls had normal body mass index – weight in kilograms/height in meter2 (BMI) Z-scores and SBP. Their 95th percentile for LVMI and LA were used to determine relative risk (RR) for high-risk groups. See Table for RR of high-risk groups. Age, gender and BMI, but not SBP predicted increased LVMI and LA.

**CONCLUSIONS:**
Overweight children regardless of SBP class are at higher risk for cardiac damage. Mechanisms besides high SBP induced cardiac changes result in increased LVMI and LA.

---

The Influence of Sports Participation on Dating Violence Attitudes and Behaviors

**BACKGROUND:**
Dating violence is a common occurrence in university populations and can be powerful in shaping lives at an important point in their personal development. The goal of this study was to understand the impact of participation in sports on dating violence attitudes and behaviors among UMKC students and possible gender differences in this impact.

**METHODS:**
We administered a cross-sectional survey to a convenience sample of UMKC students. Instruments included the Acceptance of Couple Violence scale, the Conflict Tactics Scale, items on sports participation and demographics. Data was entered into an SPSS database. Descriptive statistics were generated and a bivariate analysis to assess the relationship between sports participation (independent variables) and attitudes and practices related to dating violence (dependent variables). Two multiple regression models (one for women and one for men) will be computed to further assess these relationships.

**RESULTS:**
Our preliminary analysis showed that of the 540 participants, 56.5% women (245/322) and 43.5% men (189/218) had participated in sports. This initial analysis showed that women had better scores on each of the three scales of Acceptance of Couple Violence instrument. The bivariate and multivariate analyses are in process.

**DISCUSSION:**
While only preliminary results are available, the sample size provides considerable power for detecting gender differences; multivariate analysis will provide additional information for conclusions on this important topic.

---

**Funded in part by Sarah Morrison Award**
Imaging Findings in Human *Bordetella Bronchiseptica* Pneumonia

**ABSTRACT:**
*Bordetella bronchiseptica* is a pleomorphic, gram-negative coccobacillus which most commonly causes tracheobronchitis or “kennel cough” in dogs. It also causes other respiratory infections in rabbits and pigs and is rarely a human pulmonary pathogen. We present two immunocompromised patients diagnosed with *B. bronchiseptica* pneumonia within the course of one year at our institution. To date, 88 cases of culture-positive and presumed human infection have been reported worldwide. To our knowledge, these are the first reports of this disease in patients with B-cell lymphoma and an orthotopic cardiac transplantation. In this report, we briefly discuss the epidemiology, microbiology, and challenges in laboratory identification of *B. bronchiseptica* and describe the protean imaging manifestations of this rare pulmonary infection. We also address issues related to treatment and prognosis.

Chronic Histoplasmosis and Lymphoma Possible Association?

**BACKGROUND:**
There have been sporadic reports of chronic histoplasmosis infections subsequently developing into reticulo-endothelial tumors in the same location [1]. Murray and Brandt postulated that either the fungal infection or a cellular reaction of the reticulo-endothelial system caused the formation of lymphoma [2]. As shown by our case and now with the increasing incidence of histoplasmosis infection and lymphoma in patients treated with anti-tumor necrosis factor therapy, one has to consider a possible common etiological association [3].

**CASE REPORT:**
48 year old female presented with painful erythematous nodular skin lesions. Skin biopsy showed histoplasmosis. Skin biopsy was negative for malignancy. The following year, the patient returned with non-tender nodules in the skin. Biopsy showed large B cell lymphoma. Immunoperoxidase studies were positive for CD20, CD68, and CD30. The patient was started on Rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone. The patient has been in remission since treatment and no new nodules have been seen.

**CONCLUSION:**
Clinicians should be aware of the association between histoplasmosis and lymphoma, and should have an increasing vigilance and long-term monitoring with patients with chronic histoplasmosis infection.

**REFERENCES:**
3. US Food and Drug Administration Black Box Warning, Tumor Necrosis Factor (TNF) Blockers.
Giant Gartner’s Duct Cyst Masquerading as Bulging Amniotic Membranes

OBJECTIVE:
The current database of medical articles rarely includes information about Giant Gartner’s duct cysts. This case study was developed to exhibit a varied clinical presentation of a Gartner’s duct cyst.

METHODS USED FOR DATA COLLECTION:
We reviewed all English language articles from 1958 to the present and no similar articles were found.

RESULTS SUMMARIZED:
During a routine vaginal speculum examination on a 21-year-old primigravida at 24 weeks’ gestation, a bulging membrane was visualized. Due to the patient’s uterine contractions and the possibility of rupturing the amniotic membrane, a vaginal exam was deferred. An amniotic sac appeared to funnel into a fluid collection within the vaginal vault. The patient was placed on strict bed rest due to complaints of premature uterine contraction activity. She was induced at term once a giant Gartner’s duct cyst was reduced.

CONCLUSION:
When a fluid-filled membrane in the vaginal canal is encountered during pregnancy, non-obstetric sources such as a Gartner’s duct cyst should be considered in the differential diagnosis. A Gartner’s Duct Cyst is a remnant of the mesonephric duct that appears as a fluid filled membrane protruding from the anterolateral aspect of the vagina.

Lauroylethanolamide and linoleylethanolamide improve functional outcome in stroke

ABSTRACT:
N-acylethanolamines (NAEs) are endogenous lipid signaling molecules that are involved in numerous physiological functions in mammals, many of which mediated by central nervous system processes, including neurotransmission, reproduction, inflammation, analgesia, appetite and cytoprotection.

Recently, NAEs have gained recognition as neuroprotective compounds that have therapeutic potential for ischemic injury and stroke. In this project, we aimed to determine the neuroprotective potential of NAE 18:2 (linoleylethanolamide, LEA) in vivo, using a rat model for stroke. Middle cerebral artery occlusion and reperfusion was performed using an intraluminal filament model. 2,3,5-Triphenyltetrazolium chloride (TTC) staining of mitochondrial and cellular viability was performed to estimate infarct volume and lesion size. LEA administration resulted in a significant reduction of infarct volume and improvement of neurological outcome after ischemia/reperfusion injury when administered prior to middle cerebral artery occlusion.

Our results suggest that NAEs provide neuroprotection during ischemia/reperfusion injury and may have therapeutic benefit when used as complementary treatment with other therapies to improve stroke outcome.
Preventive, Personalized and Population Health Research

Efforts will be focused toward impact on community health conditions, especially in areas that link to our clinical strengths. These efforts will:

- incorporate cutting-edge genomic methodologies in all areas;
- build and utilize large databases that go beyond “translational” research in general;
- impact the health of our community in particular.

Specific Objectives

- Promote research and scholarly activity in targeted areas with an emphasis on Preventive, Personalized and Population Health Research
- Promote a culture of research scholarship among our faculty
- Promote research participation among learners
- Promote scholarship in clinical practice and community engagement

Targeted Research Areas

- Women’s and Children’s Health
- Neurosciences and Vision
- Injury and Prevention of Injury from Trauma and Infectious Diseases
- Chronic Diseases
- Medical Education

Key Strategies

- Leverage the large clinical base of our strong, diverse hospital affiliations
- Leverage basic and clinical interdisciplinary partnerships within UMKC
- Focus on research methodologies in health/education outcomes and genomics/bioinformatics

Outcomes

- UMKC will be recognized in the community (regionally and nationally) for expertise in focused research areas.
- Grants, publications, and presentations in patient safety, informatics, community engagement will increase.
- External grant dollars will triple and faculty publications will double within five years.
- Interdisciplinary participation will increase, reflected in joint publications and grants.
- Masters degree, IPhD, and certificate programs in clinical practice, public health, and medical informatics will be established.
- Number and percent of faculty who promote with an emphasis in clinical/translational research will increase.
4 Years of Advancing the Health of Our Community

APRIL 27
UMKC Alumni Awards Luncheon & Presentation of the UMKC School Medicine Alumni Achievement Award to Dr. Mantra Reddy and the Chancellor’s Medal to Dr. E. Grey Dimond
Time: 11:30 a.m.-1:30 p.m.
Place: InterContinental Kansas City at the Plaza
Register at www.umkcaumni.com and click on Events.

APRIL 29
School of Medicine Alumni Day
Campus Tours and Visits: Noon-4 p.m. — School of Medicine
Poster Session: 3-5 p.m. — School of Medicine lobby
Alumni Fun, Food and Friends at Diastole: 6-9 p.m.

APRIL 30
40th Anniversary Kickoff
Reunion Cocktail Hour: 5:30-6:30 p.m. — Hyatt Regency Crown Center, Empire Foyer
40th Anniversary Celebration: 6:30-9 p.m. — Entertainment, Lavish Hors D’oeuvres and Networking, Hyatt Regency Crown Center, Empire Room

Check for updates at www.med.umkc.edu/40

UMKC School of Medicine

UMKC Alumni Awards Luncheon & Presentation of the UMKC School Medicine Alumni Achievement Award to Dr. Mantra Reddy and the Chancellor’s Medal to Dr. E. Grey Dimond
Time: 11:30 a.m.-1:30 p.m.
Place: InterContinental Kansas City at the Plaza
Register at www.umkcaumni.com and click on Events.

School of Medicine Alumni Day
Campus Tours and Visits: Noon-4 p.m. — School of Medicine
Poster Session: 3-5 p.m. — School of Medicine lobby
Alumni Fun, Food and Friends at Diastole: 6-9 p.m.

40th Anniversary Kickoff
Reunion Cocktail Hour: 5:30-6:30 p.m. — Hyatt Regency Crown Center, Empire Foyer
40th Anniversary Celebration: 6:30-9 p.m. — Entertainment, Lavish Hors D’oeuvres and Networking, Hyatt Regency Crown Center, Empire Room

Check for updates at www.med.umkc.edu/40

UMKC School of Medicine