



BRODY SCHOOL OF MEDICINE

**DEPARTMENT OF INTERNAL
MEDICINE**

PRESENTS THE

FIFTEENTH ANNUAL

RESEARCH DAY



THURSDAY, MAY 24, 2001

8:30 AM – 4:00 PM

**BRODY 2W-40
BRODY SCHOOL OF MEDICINE**

**The Department of Internal Medicine
Fifteenth Annual Research Day – 2001**

is presented by

**The Brody School of Medicine
East Carolina University**

**Department of Internal Medicine
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Funded by all Sections of the Department of Internal Medicine

**Department of Internal Medicine 15th Annual Research Day
May 24, 2001**

PRESENTATION SCHEDULE

8:00 AM BREAKFAST

8:25 AM REMARKS

**James C. Byrd, MD, MPH, Chairman
Department of Internal Medicine Research Day
Steering Committee**

1st Session

**Session Moderators:
Ruth Ann Henriksen, Ph.D.
Carlos A. Estrada, MD, MS**

Abstract

8:30 AM R.A. Henriksen, Ph.D.
Allergy/Immunology/Rheumatology

No.

A1

Thromboxane Production in Response to a Protease Activated Receptor-4 (Par-4) Peptide Agonist

8:45 AM P. Mehlhop, M.D.◆
Allergy/Immunology/Rheumatology

A2

Enhancement of Il-4 And Ifn-γ Production by Peripheral Blood Mononuclear Cells in Patients on Allergen Immunotherapy

9:00 AM L. Kim, M.D.
Hematology/Oncology

A3

The Level of Lipid-Associated Sialoprotein in the Cerebrospinal Fluid Correlates with the Presence and Response Status of Primary and Metastatic Brain Tumors

9:15 AM E.L. Treadwell, M.D.
Allergy/Immunology/Rheumatology

A4

Select and Variable Systemic Lupus Erythematosus Autoantibodies Are Induced by Pristane in Balb/C Mice

9:30 AM BREAK

2nd Session

**Session Moderators:
Jeffrey Engel, MD
Gregory Pape, MD**

9:45 AM M. Hames, M.D.†
Nephrology

A5

Characteristics of Patients with Thrombotic Thrombocytopenic Purpura/Hemolytic Uremic Syndrome Treated at Pitt County Memorial Hospital

10:00 AM C. Christiano, M.D.
General Internal Medicine

A6

Enhancement of Hemodialysis with the East Carolina University Pulse Wave Dialysis Pump

10:15 AM C.A. Estrada, M.D., M.S.◆
General Internal Medicine

A7

Pharmacists Role in the Care of Hospitalized Patients

10:30 AM J.M. Preville, M.D.
General Internal Medicine

A8

The Use of Palm Handheld Computers to Care for Nursing Home Patients

10:45 AM BREAK

11:00 AM SPEAKER:

William B. Applegate, M.D., M.P.H.
Professor and Chairman
Department of Internal Medicine
Wake Forest University School of Medicine

“Clinical Research: The Agony and the Ecstasy”

12:00 PM LUNCH AND POSTERS

3rd Session

Session Moderators:

Mary Jane Barchman, MD
Cynthia Christiano, MD

- | | | | |
|---------|--|------------|---|
| 1:00 PM | G. Ho, Jr., M.D.
Allergy/Immunology/Rheumatology | A9 | The Use of Antibiotic Prophylaxis in Patients with Prosthetic Joints Undergoing Procedures Associated with Transient Bacteremia: A Survey of Rheumatologists and Orthopedists by E-Mail |
| 1:15 PM | C.A. Estrada, M.D., M.S.◆
General Internal Medicine | A10 | Peri-Operative Hyperglycemia and Outcomes in Patients Undergoing Coronary Artery Bypass Surgery |
| 1:30 PM | J. Engel, M.D.
Infectious Diseases | A11 | The Evaluation of Processes and Indicators in Infection Control (EPIC) Study: Catheter-Associated Bloodstream Infections (BSI) in the Intensive Care Unit (ICU) |
| 1:45 PM | L. McNeill, M.D.*
General Internal Medicine | A12 | Efficacy And Safety of a Two Month Regimen of Pyrazinamide and Rifampin Compared to a Six Month Regimen of Isoniazide for Treatment of Patients with Latent Tuberculosis |

2:00 PM BREAK & POSTER SESSION

4th Session

Session Moderators:

Whit Hodgin, MD
Paul Mehlhop, MD

- | | | | |
|---------|---|------------|--|
| 3:00 PM | J. Kulhanek, M.D.†
Cardiology | A13 | Three-Dimensional Echocardiography Can Visualize Intraatrial Structures Used to Guide Electrophysiology Study and Ablation Therapy |
| 3:15 PM | S.C. Patel, M.D.†
Cardiology | A14 | A Single Center Evaluation on the Use and Yield of Echocardiography in Unselected Stroke Patients |
| 3:30 PM | F.A. Ghanem, M.D.*
General Internal Medicine | A15 | Smoking Immediately Alters Diastolic Function, But Chewing Nicotine Gum Does Not |
| 3:45 PM | C.R. Collins
General Internal Medicine | A16 | House Officer Evaluations of Faculty Educational Value |

4:00 PM

PRESENTATION OF W. JAMES METZGER JR., M.D. AWARD

**Ralph Whatley, MD, Chairman
Department of Internal Medicine**

Carol Metzger

ADJOURNMENT

◆ **Candidate for Metzger Award**
† **Fellow**
* **Resident**

POSTERS

Presenter	Poster No.	Title
M.K. Atieh, M.D.† Cardiology	P1	Effect Of Cigarette Smoking On Exercise Blood Pressure In Subjects With Normal Resting Blood Pressure And Prior Myocardial Infarction
S. Brewington, M.D.† Cardiology	P2	Static Walking In Place As An Alternative To Pharmacological Stress Testing In Obese Patients For Evaluation Of Coronary Artery Disease
J. Kulhanek, M.D.† Cardiology	P3	Heart Rate Recovery In Patients With Exercise Induced Transient Ischemic Left Ventricular Cavity Dilatation
S.P. Kumar, M.D.† Cardiology	P4	Gender Difference In Systolic Arterial Pressure Drop During Adenosine Myocardial Perfusion Studies In Subjects With Abnormal Scans.
J. Kulhanek, M.D.† Cardiology	P5	Ventricular Effective Refractory Period Predicts Cycle Length Of Induced Ventricular Tachycardia
J. Kulhanek, M.D.† Cardiology	P6	Change In Regional Uptake Diameter Predicts Location Of Coronary Artery Stenosis In Patients With Transient Ischemic Dilatation Of Left Ventricle
R. A. Henriksen, Ph.D. Allergy/Immunology/Rheumatology	P7	Effects Of Signal Transduction Inhibitors On Protease Activated Receptor-Induced Platelet Aggregation
M.J. Barchman, M.D.◆ Nephrology	P8	Clearance Of Metformin By Continuous Renal Replacement Therapy (CRRT)
M. Franco, M.D.◆ General Internal Medicine	P9	Prevalence Of Palliative Care Pathways – A Survey Of North Carolina Hospitals
M. Franco, M.D.◆ General Internal Medicine	P10	Spirituality Education Of Physicians: Experiences And Attitudes
S.A. Waijen, M.D.* General Internal Medicine	P11	Olanzapine (<i>Zyprexa</i>) Overdose Associated With Atypical Neuroleptic Malignant Syndrome (NMS)
T. Wolf, M.D.* General Internal Medicine	P12	Cavitary Lung Lesions In Acquired Immune Deficiency Syndrome Patient Due To Co-Infection Of <i>Rhodococcus Equi</i> And <i>Mycobacterium Kansasii</i>
T. Aung, M.D.* General Internal Medicine	P13	Unusual Presentation Of Sjogren's Syndrome

◆ **Candidate for Metzger Award**
 † **Fellow**
 * **Resident**

William B. Applegate, M.D., M.P.H
Professor and Chairman
Department of Internal Medicine
Wake Forest University School of Medicine

Dr. Applegate received his B.A. and M.D. from the University of Louisville, Kentucky and did his internship and residency at Boston City Hospital. He obtained his M.P.H from Harvard and completed a Robert Wood Johnson fellowship at the University of North Carolina. In 1977, Dr. Applegate was appointed Assistant Professor of Medicine and Family and Community Medicine at the University of New Mexico, Albuquerque.

Dr. Applegate was promoted to Associate Professor of Medicine and Community Medicine at the University of Tennessee at Memphis in 1979 and Professor in 1987. He was Chief of the Division of Geriatric Medicine from 1979-1993 and Chairman of Preventive Medicine from 1994-1999. In 1992, he became Director of the Memphis Center for Prevention and Health Service Research and Clinical Research Center.

Dr. Applegate became Professor and Chair of Department of Internal Medicine at Wake Forest University School of Medicine, Winston Salem, North Carolina in 1999. He was on the Board of Directors of the American Society of Hypertension and the American Geriatrics Society as well as member of the Executive Committee of Council on Epidemiology and Prevention for the American Heart Association. He was also Member of the National Advisory Committee, Robert Wood Johnson Foundation Clinical Scholars Program.

Dr. Applegate is on the editorial board for the American Journal of Medicine, American Journal of Clinical Hypertension, and is Editor-in-Chief of the Journal of American Geriatrics Society. Dr. Applegate has studied problems in hypertension, aging research, hormone replacement therapy, and peripheral vascular diseases. He has over 150 research publications in peer-reviewed journals and over 20 books and book chapters. At present, he is the Co-Investigator of the Hartford-Alliance for Associations in Internal Medicine supported by the Hartford Foundation.

W. James Metzger, Jr., M.D. Award

The W. James Metzger, Jr., M.D. award will be presented to the most outstanding presentation by a Junior Faculty in the Department of Internal Medicine. A peer-review process will select the winner. The recipient of the award will receive a certificate and have his/her name engraved on a plaque that will be displayed in the Department of Internal Medicine Library. He/She will also receive recognition on the Department of Internal Medicine web site.

Dr. Metzger, a native of Pittsburgh, Pennsylvania, was a graduate of Stanford University and Northwestern University Medical School, Chicago, Illinois. He completed his residency and research fellowship in Allergy-Clinical Immunology at Northwestern University. After serving in the United States Air Force, he came to Greenville in 1984 to join the East Carolina University School of Medicine. During his tenure at East Carolina University Dr. Metzger rose to the rank of Professor of Medicine. He was Section Head of the Section of Allergy-Immunology and held the appointments of Vice Chairman of Research, Department of Internal Medicine; Executive Director, the Center for Asthma, Allergy, and Immunology; Assistant Vice Chancellor for Clinical Research; Assistant Dean for Clinical Research; and Director, Clinical Trials Office. He was the recipient of the East Carolina University Award for Excellence in Research and Creative Activity and the Distinguished Research Professor of Medicine. His research was published in the New England Journal of Medicine, Nature, and other journals. Dr. Metzger had mentored numerous faculty and fellows.

In August 2000 Dr. Metzger accepted a position as Professor of Allergy, Asthma, and Immunology at the National Jewish Medical and Research Center and was a faculty member at the University of Colorado Medical School, Denver, Colorado. He died on November 11, 2000 at the age of 55. Dr. Metzger represented excellence in research.

ABSTRACTS

Oral Presentations

(In Presentation Order)

A1 – 8:30 am

THROMBOXANE PRODUCTION IN RESPONSE TO A PROTEASE ACTIVATED RECEPTOR-4 (PAR-4) PEPTIDE AGONIST. R.A. Henriksen, V.K. Hanks.

NOTES:

BACKGROUND AND OBJECTIVES: We have previously reported that 300 μM GYPGKF-NH₂, a PAR-4 agonist peptide stimulates aggregation, but not thromboxane production by washed human platelets. Recently the peptide AYPGKF-NH₂ has been identified as a more potent PAR-4 peptide agonist. The objective was to determine whether this agonist stimulates thromboxane production by human platelets.

METHODS: Platelets were isolated from citrated whole blood by differential centrifugation and washed by resuspension in citrated HEPES-tyrodes buffer. The final platelet count was adjusted to 2.6–3.1 x 10⁸/mL. Agonists, 100 nM thrombin, 100 μM SFLLRN, a PAR-1 agonist peptide, and 50-500 μM AYPGKF-NH₂ were added to stirred platelets, adjusted to 1 mM Ca²⁺, at 37 C. Stirring was continued and platelet aggregation was monitored for 5 minutes, after which platelets were removed by centrifugation and the supernatants were stored at –80 C prior to assay for thromboxane B₂ by ELISA. Experiments were performed in duplicate or triplicate with different platelet donors and thromboxane produced by 100 nM thrombin was defined as 100 % thromboxane for each experiment. Significance was established by p<0.05 determined by t-test comparison.

RESULTS: At 500 μM , AYPGKF-NH₂ stimulates 40 % thromboxane production. When AYPGKF-NH₂ and SFLLRN are added together, the amount of thromboxane produced is additive with that produced by the agonists individually.

CONCLUSIONS: Thromboxane is produced in response to PAR-4 stimulation of platelets. The sum of PAR-1- and PAR-4-induced thromboxane production appears to account for the total thromboxane produced in response to thrombin. These results explain the previous conclusion by this laboratory that two platelet receptors are involved in thrombin-induced thromboxane production.

A2 – 8:45 am

ENHANCEMENT OF IL-4 AND IFN- γ PRODUCTION BY PERIPHERAL BLOOD MONONUCLEAR CELLS IN PATIENTS ON ALLERGEN IMMUNOTHERAPY. P. Mehlhop, A. Sigounas, G. Sigounas.

NOTES:

BACKGROUND AND OBJECTIVES: Allergen immunotherapy (IT) has been used with great success in the treatment of allergic rhinitis and asthma since the early part of the past century. Very little is known about the mechanisms by which IT works. We hypothesized that an alteration in cytokine production by lymphocytes occurs during the course of allergen immunotherapy.

METHODS: We recruited human volunteers and divided them into three groups based on skin test results: Group I: Non-Atopic controls who were skin test negative to both species of dust mite (n=8), Group II: Atopic patients who were skin test positive to either or both species of dust mite (n=8) and Group III: Atopic patients currently on dust mite immunotherapy for a period of at least one year (n=8). Blood was drawn from each patient by standard venipuncture and peripheral blood mononuclear cells were isolated. Cells were cultured with media alone, phytohemagglutinin (PHA), Tetanus toxoid (TT) or dust mite mix (DM). The number of IL-4 and IFN- γ -producing cells was determined using ELISPOT assays.

RESULTS: We found that atopic controls had fewer IFN- γ -producing cells (79 cells/well) than did non-atopic controls (241cells/well) and that this number increased in the immunotherapy group to a level closer to that of the non-atopic controls (111 cells/well). Interestingly, the number of IL-4-producing cells followed a similar pattern with atopic controls having the lowest numbers of IL-4-producing cells (55 cells/per well), non-atopic controls having the highest number (119 cells/per well), and patients on IT having a number greater than atopic controls, though still somewhat lower than that of non-atopic controls (87 cells/per well).

CONCLUSIONS: We conclude that there may be a state of induced anergy or a loss of suppressor cell function in atopic patients that is at least partially reversed during the course of immunotherapy.

A3 – 9:00 am

THE LEVEL OF LIPID-ASSOCIATED SIALOPROTEIN IN THE CEREBROSPINAL FLUID CORRELATES WITH THE PRESENCE AND RESPONSE STATUS OF PRIMARY AND METASTATIC BRAIN TUMORS. L. Kim.

NOTES:

Changes in the glycosylation pathways of tumor cells result in larger amounts of surface sialoproteins compared to normal cells. These surface sialoproteins can then be released into the environment by shedding or cell lysis. We evaluated whether lipid-associated sialoprotein (LSP) concentration in the cerebrospinal fluid (CSF) discriminates between patients (pts) with primary or metastatic central nervous system (CNS) tumors and pts without CNS tumors and whether CSF LSP correlates with response to treatment. Method: CSF samples with physiologic white blood cell counts (<5/ul) were obtained from a tissue bank. The concentration of LSP was measured by chloroform: methanol extraction followed by protein precipitation. One-way analysis of variance and Scheffe's pairwise comparisons were used for the statistical analysis. Results: The CSF of neurologically normal controls, pts with various non-malignant neurologic disorders, and pts with systemic cancer not involving the CNS contained nearly identical levels of LSP. Pts with untreated, newly diagnosed primary or metastatic CNS tumors contained on average 4-fold higher levels of LSP compared to patients without CNS cancer (p = 0.0001). CSF from pts with progressive CNS tumors contained high levels of LSP, comparable to the levels found in newly diagnosed pts, and nearly 4-fold greater than in pts with treatment-responsive CNS tumors (p = 0.0001). Using ROC curves, a cutoff level for CSF LSP with high sensitivity and specificity for the presence of CNS cancer can be established. Conclusions: The concentration of LSP in the CSF correlates with the presence of intracranial malignancies and response to treatment.

A4 – 9:15 am

SELECT AND VARIABLE SYSTEMIC LUPUS ERYTHEMATOSUS AUTOANTIBODIES ARE INDUCED BY PRISTANE IN BALB/C MICE. E.L. Treadwell, D. Dixon, K. O'Brien.

NOTES:

BACKGROUND AND OBJECTIVES: Induction of systemic lupus erythematosus (SLE) associated antibodies (Abs) anti-nRNP/Sm and Su by pristane have been demonstrated in BALB/c mice. Our study was to better understand the differences that may exist in the induction of SLE associated Abs by pristane to anti-Sm, anti-RNP, and anti-Su.

METHODS: In our study, twelve 2-month old female BALB/c mice were injected intraperitoneally with 0.5 ml of pristane, tested at 30, 61, 89 and 127 days respectively by double immunodiffusion (ID) and antigen capture enzyme-linked immunoassay (ELISA). In our ELISA, monospecific human serum for anti-Sm, anti-RNP, and anti-Su were confirmed by specific antigen elution from an IgG covalent linked immunopure column (Pierce Co., Rockford, IL), and retested by ID, ELISA, and Western immunoblotting. Results at each time period were compared to 4 non-injected or negative control mice.

RESULTS: Only 2 mice positive for anti-Su were detected by ID at 127 days. Mean OD405nm ELISA readings for 8 surviving mice were as noted:

<u>Days</u>	<u>Anti-Sm</u>	<u>Anti-RNP</u>	<u>Anti-Su</u>
30	0.454	0.799	0.235
61	0.496	0.775	0.275
89	0.612	0.719	0.288
127	0.675	0.773	0.773
Negative Control	0.440	0.666	0.291

Anti-RNP Abs in pristane-injected mice were 3.4 standard deviations (SDs) greater than controls. Anti-Sm demonstrated earlier Ab responses to pristane than anti-Su and 25.46 SDs over controls. Anti-Su Abs demonstrated later but more enhanced Ab response than anti-RNP or anti-Sm; being 30.39 SDs more than controls. All Abs groups were significantly different at 30, 61, and 89 days (P < .03; paired t-test). At 127 days, OD405nm readings were similar for all Abs.

CONCLUSION: Immune responses to SLE associated nuclear antigens may differ and may be influenced by various factors, possibly environmental or genetic.

A5 – 9:45 am

CHARACTERISTICS OF PATIENTS WITH THROMBOTIC THROMBOCYTOPENIC PURPURA/HEMOLYTIC UREMIC SYNDROME TREATED AT PITT COUNTY MEMORIAL HOSPITAL. M. Hames, P. Bolin.

NOTES:

BACKGROUND AND OBJECTIVES: TTP/HUS is a rare syndrome manifested by thrombocytopenia, hemolytic anemia, fever, neurological changes, and renal involvement. Though 90% of patients survive the initial episode, up to 60% of patients experience a relapse of disease. The incidence of TTP/HUS in Eastern North Carolina appears to be rising, similar to other isolated centers representing no particular geographical pattern.

METHODS: A retrospective analysis was performed to review the demographics of patients recently treated for TTP/HUS.

RESULTS: Over a 4-year period from 1996 to 1999, there were over 50 PCMH admissions for TTP/HUS. Two-thirds of these patients were female and two-thirds were African American. Approximately two-thirds of the admissions were for acute disease. 80% of the relapses occurred in African American patients. The male: female ratio remained 1:2. 6% of the patients were seropositive for HIV and less than 5% had other secondary causes of TTP/HUS. 17% of patients died. The majority of admissions listed home addresses in Pitt and Craven Counties, but 19 counties in Eastern North Carolina were represented. Our reported occurrence of TTP/HUS in the 1996-1999 cohort is much greater than previously published reports. Preliminary review of data from 2000 onward suggests this increasing trend is not continuing.

CONCLUSIONS: The findings of female preponderance and higher incidence of relapse in African American females is consistent with other reports. Further study is required to define the rate of relapse as well as clinical and epidemiologic characteristics of patients experiencing relapse. Though a number of interesting observations were noted, these limited preliminary data failed to isolate clear demographic risk factors.

A6 – 10:00 am

ENHANCEMENT OF HEMODIALYSIS WITH THE EAST CAROLINA UNIVERSITY PULSE WAVE DIALYSIS PUMP.* C. Christiano, C. McCotter, P. Bolin.

NOTES:

The annual mortality of end stage renal failure has changed little over the past decade despite a number of measures to increase the delivered dose of dialysis. Most of these increases have come from increasing the duration or pump speed in dialysis, both of which can negatively impact the morbidity associated with dialysis.

We report the results of several experiments documenting significant improvement in the efficiency of dialysis utilizing advances with slower dialysis pump speeds and shortened treatment duration, thus improving the tolerance of dialysis as well. This enhanced efficiency is the result of delivering hemodialysis via the ECU Pulse Wave Dialysis Pump. This system employs a unique pulse wave system that theoretically disrupts laminar flow and enhances transport by creating favorable changes in the perimembrane concentration gradients in both the blood and dialysate compartments.

In vitro studies modeling dialysis with a one-pool urea source revealed an increased efficiency as high as 45% with pulsation of the blood compartment alone and 27% with pulsation of the dialysate compartment alone. *In vivo* studies in an acute renal failure animal model revealed an increased efficiency of 40% when the blood alone was pulsed. The pump system was well tolerated in the animal model without evidence of hemodynamic instability or hemolysis.

Additional studies are needed to further develop this dialysis system, especially in regards to the shape of the energy wave and the temporal relationships between the counterpulsing waves.

*US Patent Filed

A7 – 10:15 am

PHARMACISTS ROLE IN THE CARE OF HOSPITALIZED PATIENTS. CA Estrada, L Pittman, K Fulton, J Worden, P Payne, T Czaplinski, N Gillis, J Carter, J Hoggard, R Sahni. Pharmacy, CISO, Campbell University, and East Carolina University.

NOTES:

BACKGROUND AND OBJECTIVE: Clinical pharmacists at the point of service improve patient care, decrease errors, and decrease costs. The majority of medication errors can be prevented at the time of ordering. We describe interventions performed by pharmacists in a hospital setting.

METHODS: We describe 3,452 interventions performed by pharmacists at a 700-bed hospital during one year. Pharmacists collected data prospectively and categorized interventions by level of clinical significance and acceptance. Pharmacists performed rounds at the point of care or reviewed the orders during the medication administration process (order processing, verification, or delivery). Computerized physician's order entry is not available at our institution.

RESULTS: Pharmacists intervened to prevent adverse events in 32% (allergic reaction, drug interaction, side effect or other toxicity), clarified or corrected orders in 25% (order incomplete or illegible), or recommended alternative therapy in 25% (to avoid therapeutic failure, improve therapeutic response, improve patient compliance, discontinue a medication not indicated, decrease waste, decrease cost). Pharmacists also provided drug information in 10%, or intervened in other ways in 7%. Physicians accepted 96% of interventions.

Type of Intervention	N (%)	Acceptance
Prevent adverse effects	1,111 (32%)	95%
Order clarification/correction	876 (25%)	99%
Recommend alternative therapy	869 (25%)	95%
Drug information	357 (10%)	98%
Others	239 (7%)	95%

CONCLUSIONS: Participation of pharmacists during rounds contribute to patient care. The majority of recommendations were accepted by physicians. The aim of the interventions is to improve patient care, prevent adverse effects, decrease errors, and decrease costs.

A8 – 10:30 am

THE USE OF PALM HANDHELD COMPUTERS TO CARE FOR NURSING HOME PATIENTS. J. M. Preville

NOTES:

BACKGROUND AND OBJECTIVES: Our medical school nursing home service has had difficulty tracking the care of our nursing home patients because different attendings and residents were involved in the care of these patients. These difficulties included not having access to the patient's diagnoses code status, current medications, pending labs, imaging, or procedures scheduled for the patient, or the subsequent results. There was also the question of when patients must be seen to comply with Medicare and institutional requirements. The objective was to develop a system that attendings and residents could track all the data on patients and provide better care with this information.

METHODS: A palm pilot database called HandBase was used to develop a database that had information on the nursing home patients concerning their location, dates seen, diagnoses, code status, allergies, medications, memos on contacts, studies and situations pending, and CPT codes for billing. HandJet, an interface program, linked the database on the palm pilot to a Microsoft Access database through the Brody School of Medicine computer network.

RESULTS: This system allows database backup, printing of work lists, and patient data notebooks. It also enables all physicians and staff involved in patient care to have access to information needed in the ongoing care of the nursing home patients. Having a current and complete profile on each patient has given the doctors the ability to respond and care for these patients in a more timely manner. Documentation is immediate and more detailed, making billing more efficient and accurate, as it is now a part of the report generator.

CONCLUSIONS: Maintaining a database that is mobile improves effective and timely patient care in the nursing home setting.

A9 – 1:00 pm

THE USE OF ANTIBIOTIC PROPHYLAXIS IN PATIENTS WITH PROSTHETIC JOINTS UNDERGOING PROCEDURES ASSOCIATED WITH TRANSIENT BACTEREMIA: A SURVEY OF RHEUMATOLOGISTS AND ORTHOPEDISTS BY E-MAIL. G. Ho, Jr.

NOTES:

BACKGROUND AND OBJECTIVES: In July 1997, a published advisory statement recommended antibiotic prophylaxis be used in dental patients with total joint replacement (TJR) undergoing procedures with high risk of bacteremia **only** if they are immunocompromised, immunosuppressed or if they have any of the following: type 1 diabetes, previous prosthetic joint infections, malnourishment, hemophilia, or are within 2 years of TJR (**JADA 1997; 128:1004*). Between 1999 and 2000, we surveyed Rheumatologists (RHU) and Orthopedists (ORP) on their attitudes on the use of antibiotic prophylaxis in similar situations.

METHODS: A 10-question survey was e-mailed to 1,660 members of the American College of Rheumatology (ACR 1999) and a similar survey to 1,392 members of the American Academy of Orthopaedic Surgeons (AAOS 2000 Directory).

RESULTS: Response rates were 22.2% for RHU and 33.1% for ORP. 21% RHU and 35% ORP had seen cases of late infections in a TJR from transient bacteremia of an invasive procedure. 55% RHU and 59% ORP use antibiotic prophylaxis in all TJR patients regardless of their immune status; 36% RHU and 36% ORP use it only in immunocompromised patients; and 9% RHU and 5% ORP use it in yet another manner. Only 33% RHU are aware of the 1997 advisory statement (*) and 74% RHU feel there is insufficient data to justify their practices. 42% RHU and 44% ORP are willing to help design future studies and/or follow TJR patients prospectively for infectious complications.

CONCLUSIONS: Almost all RHU and ORP use antibiotic prophylaxis in their TJR patients who undergo procedure that leads to transient bacteremia. However, only 36% do so in a manner recommended by the AAOS and ADA (American Dental Association) (*). More evidence-based data and education on cost-effective use of antibiotic prophylaxis are needed.

A10 – 1:15 pm

PERI-OPERATIVE HYPERGLYCEMIA AND OUTCOMES IN PATIENTS UNDERGOING CORONARY ARTERY BYPASS SURGERY CA Estrada, JA Young, VJ Dixon, JW Carter, LW Nifong, WR Chitwood, Jr. PCMH, and Departments of Surgery and Medicine.

NOTES:

BACKGROUND AND OBJECTIVE: Peri-operative hyperglycemia is associated with increased sternal wound infection rates among patients with diabetes mellitus (DM) undergoing cardiac surgery. Whether the same finding applies to patients without DM is unknown. We sought to measure the relationship between peri-operative glycemia among patients undergoing coronary artery bypass surgery on 30-day mortality and infection rates (pneumonia, urinary tract, sternal wound, harvest site).

METHODS: Cohort study of 1,574 patients who underwent coronary artery bypass surgery during 1998-1999. The mean peri-operative blood glucose for each patient was calculated (day of and day after surgery). We used logistic regression to test the significance of peri-operative glycemia on mortality and infection rates adjusting for diabetes status and validated perioperative risk scores (including: age, gender, obesity, ejection fraction, urgency of operation, prior cardiac surgery, vascular disease, renal failure, emphysema).

RESULTS: The mean age was 64 years (SD 10), 67% were male, 18% were non-white, and 35% had DM. The 30-day mortality was 2.8%, 5% developed infections. Adjusting for diabetes status and baseline perioperative risk, mortality was increased by 35% (95% CI, -9% to 99%) and infections were increased by 28% (95% CI, -4% to 72%) per each 50 mg/dl glucose increase. The adjusted outcomes were:

Mean Peri-Operative Blood Glucose	Mortality	Infections
150 mg/dL	1.2 %	2.0 %
200 mg/dL	1.6 %	2.6 %
250 mg/dL	2.2 %	3.3 %
300 mg/dL	2.9 %	4.2 %
350 mg/dL	3.9 %	5.4 %

CONCLUSION: Peri-operative hyperglycemia in patients undergoing coronary artery bypass surgery, with or without DM, may be associated with higher mortality and increased infections.

A11 – 1:30 pm

THE EVALUATION OF PROCESSES AND INDICATORS IN INFECTION CONTROL (EPIC) STUDY: CATHETER-ASSOCIATED BLOODSTREAM INFECTIONS (BSI) IN THE INTENSIVE CARE UNIT (ICU). J. Engel and the EPIC Team.

NOTES:

BACKGROUND AND OBJECTIVES: Little is known on the impact of processes on quality indicators in hospitals. EPIC was designed to measure the effect of patient characteristics, processes of care, and organizational factors on a well-defined indicator, BSI rate in the ICU.

METHODS: A 13-month prospective, multicenter observational study using standard CDC definition of BSI followed 65 randomly selected patients from 55 study ICUs undergoing central venous catheter (CVC) insertion for BSI. Patient characteristics and CVC insertion process details were collected and each ICU also reported the overall CVC-associated BSI rate per CDC protocol. Two surveys were completed on hospital organizational factors. Factors shown to affect BSI in EPIC were compared between Pitt County Memorial Hospital (PCMH) and the aggregate data.

RESULTS: Duration of line use was the strongest factor associated with BSI. After adjusting for line-days, the following patient characteristics and processes of care had an increased relative risk (RR) of BSI: organ transplant (RR=3.00, p=0.008), line used for TPN (1.75, 0.002), post-surgery (1.72, 0.002), unusual occurrence during line insertion (1.67, 0.047), male sex (1.57, 0.022), and age <66 (1.56, 0.010). Hospital factor(s) associated with increased BSI rate was a staffing ratio of <11 RN hours/patient-day (OR=1.396, p=0.005); and with decreased BSI rate were CDC participating hospital (0.807, 0.030), mandatory infection control education (0.836, 0.049), and use of needleless IV system (0.838, 0.053). The overall BSI rate was 4.17 BSI/1000 catheter-days and PCMH was 12/1000. PCMH had younger patients (57 vs. 63.5 years, p=0.02), greater TPN use (27% vs. 18%, p=0.04), but less post-surgery patients (9% vs. 23%, p=0.008). PCMH had a staffing ratio of 14 and a needleless IV system, but was not a CDC participant and had no mandatory infection control education.

CONCLUSION. Although many factors effecting BSI in ICU were unalterable, alterable factors shown by EPIC to affect BSI should be targeted by hospitals in quality improvement programs.

A12 – 1:45 pm

EFFICACY AND SAFETY OF A TWO MONTH REGIMEN OF PYRAZINAMIDE AND RIFAMPIN COMPARED TO A SIX MONTH REGIMEN OF ISONIAZIDE FOR TREATMENT OF PATIENTS WITH LATENT TUBERCULOSIS. E.L. McNeill, P. Cook, M. Allen.

NOTES:

Current American Thoracic Society guidelines recommend a 6-9 month course of therapy with isoniazide (INH) for treatment of persons with latent tuberculosis infection (LTBI) who are at high risk for reactivation of disease. This regimen has a high rate of non-compliance due to the long course of therapy. An alternative, acceptable regimen is a two-month course of pyrazinamide and rifampin (PZA/RIF). In an effort to increase patient compliance and to reduce workload, the Pitt County Health Department adopted in 1999 the two-month regimen for treatment of persons with LTBI. Persons were identified as candidates for the PZA/RIF regimen if there were no contraindications to the use of rifampin, e.g., oral contraceptives, and warfarin. Over a 21-month period, 54 persons were treated with PZA/RIF and 65 persons received INH. The age, ethnicity, and sex of the persons in the two groups were similar. Compared with the INH regimen, persons treated with PZA/RIF were more likely to complete therapy (72% vs. 52%; p=0.027). There was a trend towards a higher rate of clinically significant hepatitis (>4X baseline liver transaminases) in the PZA/RIF group (11.1% vs. 3.0%; p=0.082). Two persons in the RIF/PZA group developed severe hepatitis (liver transaminases >50x baseline levels); in both cases, the transaminases returned to normal after the medications were discontinued. A history of alcohol use was not a risk factor for developing hepatitis. White race appeared to be the only risk factor for developing hepatitis with the PZA/RIF regimen (p=0.025). This data supports the use of the short course PZA/RIF regimen for treatment of persons with LTBI. The shorter course regimen was associated with a significantly higher completion rate compared with 6 months of therapy with INH. The risk of hepatitis with PZA/RIF appears to be much higher than has previously been reported. Further studies will need to be done to determine if white race is a risk factor for developing hepatitis with this regimen.

A13 – 3:00 pm

THREE-DIMENSIONAL ECHOCARDIOGRAPHY CAN VISUALIZE INTRAATRIAL STRUCTURES USED TO GUIDE ELECTROPHYSIOLOGY STUDY AND ABLATION THERAPY. J. Kulhanek, V.L. Sorrell.

NOTES:

BACKGROUND: The significance of functional or fixed barriers in the genesis and treatment of atrial tachyarrhythmias has been recognized both in animal models and in humans.

OBJECTIVES: We tested the ability of three-dimensional echocardiography (3DE) to visualize key intracardiac structures important for mapping and catheter ablation of supraventricular tachyarrhythmias.

METHODS: Transesophageal echocardiography was used in conjunction with the computerized setup to control rotation of the multiplane probe in three-degree increments from 0 to 180 degrees. Off-line image post-processing was then used to generate shaded-gray three-dimensional images.

RESULTS: The following intracardiac structures were clearly visualized: pulmonary vein ostium (pv) and section, tricuspid annulus (TA), triangle of Koch (TK), crista terminalis (CT) and ostia of both caval veins (SVC, IVC), see Figure (LA – left atrium, VS – interventricular septum, TV – tricuspid valve, TT – tendon of Todaro, AR – aortic root, HV – Hepatic vein, RAW – right atrial wall)

The currently used views of two-dimensional intracardiac echocardiography can be dramatically improved with three-dimensional technology. Three-dimensional reconstruction may reduce catheter artifact, making imaging potentially clearer in the setting of multiple intracardiac catheters. Better views of the atrial floor could help assure the continuity of linear ablation of atrial flutter isthmus.

CONCLUSION: Three-dimensional echocardiographic image reconstruction, using transesophageal echocardiography, provides clear anatomic views of structures inside the human atria, useful for guiding catheter ablation of supraventricular arrhythmia, including crista terminalis, triangle of Koch and ostia of the pulmonary veins.

A14 – 3:15 pm

A SINGLE CENTER EVALUATION ON THE USE AND YIELD OF ECHOCARDIOGRAPHY IN UNSELECTED STROKE PATIENTS. S.C. Patel, M. Erdmann, D. Price, V.L. Sorrell.

NOTES:

BACKGROUND: A distinct advantage of TEE in stroke patients is its ability to image for presence of aortic atherosclerotic debris (AD) or a patent foramen ovale (PFO). Despite this knowledge, transthoracic echocardiography (TTE) has traditionally been the primary exam requested in stroke patients at our institution.

OBJECTIVE: To compare the utilization and yield of TTE and TEE in stroke patients to rule out source for embolization.

METHODS: We performed a retrospective, consecutive chart review of the last 100 echocardiograms ordered in stroke patients unselected* for age, sex, blood pressure, cardiac disease, or type of stroke. If any of the following were identified the study was considered positive: cavitory mass/thrombi; complex AD (mobile;> 4 mm); PFO; or endocarditis (VEG). Non-complex AD, possible cavitory thrombi, or valvular strands were categorized as an indeterminate results (?).

RESULTS: Seventy-four TTE studies were performed with 2 positive (2.7%), 3 indeterminate (4.3%), and 69 negative (93%) results. Twenty-six TEE studies were performed with 13 positive (50%), 2 indeterminate (7.7%) and 11 negative studies (42.3%) results.

The specific findings are listed in the table.

Pathology	Mass/clot			AD			PFO			VEG		
	+	?	-	+	?	-	+	?	-	+	?	-
TTE	2	3	69	0	0	74	0	0	74	0	0	74
TEE	2	0	24	10	1	15	4	22	0	0	1	25

CONCLUSION: The majority of echocardiograms (74%) at our institution ordered for an unselected population* of stroke patients are TTE and nearly 95% of these are negative. TEE was abnormal in 50% of cases with complex atherosclerotic debris the most frequent pathologic finding seen in 10/26 patients (38%).

A15 – 3:30 pm

SMOKING IMMEDIATELY ALTERS DIASTOLIC FUNCTION, BUT CHEWING NICOTINE GUM DOES NOT. FA Ghanem, AD Sumner, CA Mann, VL Sorrell, MD.

NOTES:

BACKGROUND AND OBJECTIVES. The purpose of this study was to assess the LV diastolic function immediately before and after smoking one cigarette, and compare these findings with nicotine only.

METHODS. Pulsed-wave and color flow Doppler echocardiography was performed in 27 healthy individuals with no evidence of organic heart disease immediately before and after smoking one cigarette (group 1; N=14; age 33 ± 5) or 15 minute chewing of 4 mg nicotine gum (group 2; N=13; age 28 ± 3). The mitral and pulmonary vein Doppler and color flow propagation (CFP) was recorded and measurements were later performed in a blinded manner. The major findings are shown in table 1.

RESULTS.

Table 1.

	Group 1 (cigarette)			Group 2 (nicotine gum)		
	Mean ± SE		P	Mean ± SE		P
	Before	After		Before	After	
HR	65±6	72±7	.059	65±8	68±6	NS
E vti	11.7±.6	10.6±.5	.004	10.2±.7	9.6±.7	NS
A vti	4.3±.4	5.0±.4	.065	4.3±.4	4.3±.3	NS
E/A	2.9±.2	2.2±.2	.002	2.5±.3	2.3±.2	NS
AR	27.2±1.2	31.6±1.2	.003	26.4±1.2	28.4±1.0	NS
CFP	52.7±3.4	62.3±3.1	.012	53.8±3.7	53.3±3.3	NS

E, early rapid filling wave; A, atrial contraction wave; vti = velocity time integral; AR= pulmonary vein atrial reversal; NS, not significant.

CONCLUSION: In healthy, young individuals, smoking one cigarette caused a significant, abrupt change in the left ventricular diastolic performance. This was not observed after the administration of nicotine in the form of gum

A16 – 3:45 pm

HOUSE OFFICER EVALUATIONS OF FACULTY EDUCATIONAL VALUE. CR Collins, P Lichstein, CA Estrada, RE Whatley.

NOTES:

BACKGROUND AND OBJECTIVES. House officers' ratings of faculty teaching are important elements in assessing the educational mission of our institution. However, an effective tool to evaluate faculty had not been developed. Evaluations are necessary in the promotion and tenure process. Our objective was to implement an evaluation tool of faculty educational value by house officers.

METHODS. At the end of the academic year, each resident completed the "Global Evaluation of Faculty Teaching," an instrument developed and implemented at the University of Michigan. Each faculty was rated for their global educational value on a Likert scale from 0 to 5

(0 = needs improvement to 5 = excellent). Reports were generated for each faculty member, their respective Section Heads, the Residency Program Director, and the Chairman of the Department of Medicine. The analyses and reporting was done without knowledge to individual scores.

RESULTS. Twenty house officers completed 809 evaluations FY98-99 and 34 completed 1,194 evaluations FY99-00. The overall educational value is shown in table.

Year	Needs Improvement (0 – 1)*	Average (2 – 3)*	Excellent (4 – 5)*	Mean ± SD
98-99	11%	20%	69%	3.9 ± 1.1
99-00	7%	25%	68%	4.0 ± 1.0

* In parentheses indicates score range

The mean educational value did not change in the two years of observation (p > 0.05).

CONCLUSION. A tool to evaluate faculty educational value was successfully implemented. The tool provides a mean to review educational performance.

ABSTRACTS

Poster Presentations

P1 EFFECT OF CIGARETTE SMOKING ON EXERCISE BLOOD PRESSURE IN SUBJECTS WITH NORMAL RESTING BLOOD PRESSURE AND PRIOR MYOCARDIAL INFARCTION. M.K. Atieh, C. Ellis, A.Y. Al-Hindi, A. Ali Dehghan-Azad, M.H.N. Tabrizi, A. Movahed.

NOTES:

BACKGROUND: Cigarette smoking raises B/P, probably through the nicotine-induced release of norepinephrine from adrenergic nerve endings. However we have previously shown that in subjects with normal resting B/P and normal exercise myocardial perfusion scan (EMPS), cigarette smoking had no effect on exercise B/P. In this study we evaluated the effect of smoking in subjects with normal resting B/P who had fixed myocardial perfusion defect (scar), but no transient myocardial perfusion defect (no ischemia).

METHODS: We evaluated the effect of smoking on exercise B/P in 820 consecutive subjects who were referred for EMPS and had normal resting B/P and abnormal EMPS seen as fixed myocardial perfusion defect, scar.

RESULT: Of 820 subjects (483 males, 337 females, average age of 56 years old) 92 had normal resting blood B/P, systolic < 140 mmHg and diastolic < 90mmHg, and abnormal EMPS scan seen as fixed myocardial perfusion defect, scar. Of these 92 subjects, 40 had exaggerated systolic B/P response to exercise >200mmHg or elevated diastolic B/P >90mmHg and/or both (group 1).

Fifty-two of 92 subjects had exercise systolic B/P < 200mmHg and exercise diastolic B/P < 90mmHg (group 2). Then each group was divided to smokers (A), and nonsmokers (B)

Group	Number of subjects	Resting B/P	Exercise B/P
1-A Smokers	21	125/81 mmHg	195/99 mmHg
1-B Nonsmokers	19	126/79 mmHg	182/95 mmHg
2-A Smokers	25	117/76 mmHg	159/76 mmHg
2-B Nonsmokers	27	118/73 mmHg	154/71 mmHg

CONCLUSION: In our subjects with normal resting blood pressure and fixed myocardial perfusion defect (scar), cigarette smoking had no effect on exercise blood pressure.

P2 STATIC WALKING IN PLACE AS AN ALTERNATIVE TO PHARMACOLOGICAL STRESS TESTING IN OBESE PATIENTS FOR EVALUATION OF CORONARY ARTERY DISEASE. S. Brewington, A. Movahed.

NOTES:

The cause of inability to achieve target heart rate in obese patients with treadmill or bicycle exercise is often multifactorial, including severe deconditioning, physical limitations of the patient, refusal of participation, and fear of exercise equipment. Pharmacological stress testing in conjunction with a technetium-99m perfusion agent is an option but is less desirable because of expense and sub optimal image quality. We investigated the ability to achieve adequate heart rate for the evaluation of chest pain in the deconditioned obese patient by static walking in place.

We stressed 11 (8 female, 3 male) obese (average weight 415 lb {body mass index 65}) patients by walking in place to achieve adequate heart rate. Each walked in place while pulse, blood pressure, and ECG were monitored. The speed of static walking was increased as needed and at maximal exercise, technetium-99m sestimibi was injected and walking in place continued for an additional 1-2 minutes.

The target heart rate (85% of the age predicted heart rate) was achieved in 6 of 11 patients (55%), 80% of age predicted in 9 of 11 (82%), and 75% of age predicted in 100% of the patients. The systolic blood pressure increased by an average of 42 mmHg and all test were ended due to fatigue after an average of 7 minutes and 18 seconds of walking in place.

Static walking in place is an option for achieving adequate heart rate in some obese patients for the evaluation of chest pain.

HEART RATE RECOVERY IN PATIENTS WITH EXERCISE INDUCED TRANSIENT ISCHEMIC LEFT VENTRICULAR CAVITY DILATATION. J. Kulhanek, V.L. Sorrell, S. Kumar, J.H. Brooks, M.S. Swanson, H.J. DeAntonio, A. Movahed.

NOTES:

BACKGROUND: Heart rate recovery after cessation of exercise (HRR) is a predictor of mortality in patients (pts) without history of heart disease. The incidence of abnormal HRR in pts with transient ischemic left ventricular cavity dilatation (TID) and severe multivessel coronary artery disease (SCAD) is not known.

METHOD: We analyzed HRR in 29 consecutive pts (age 60±9 years; mean resting LVEF 52%±11%, 76% males) with TID demonstrated on standard Bruce treadmill exercise SPECT, and angiographically documented SCAD. Previously defined normalcy limit of decrease in heart rate more than 12 beats in first minute after cessation of exercise was used.

RESULTS: Abnormal HRR was found in 51% (16/29) of pts with TID, and 71% (12/17) pts with TID, who could not achieve over six minutes on standard Bruce protocol.

CONCLUSION: Abnormal HRR in patients with TID and SCAD is found more commonly in those who did not achieve more than six minutes on standard Bruce treadmill protocol.

P4

GENDER DIFFERENCE IN SYSTOLIC ARTERIAL PRESSURE DROP DURING ADENOSINE MYOCARDIAL PERFUSION STUDIES IN SUBJECTS WITH ABNORMAL SCANS. S.P. Kumar, W.C. Reeves, M.J. Swanson. A. Movahed.

NOTES:

BACKGROUND: Adenosine is a coronary vasodilator used in conjunction with radionuclide myocardial perfusion imaging for evaluation of coronary artery disease. Male and female may have different hemodynamic response during adenosine infusion. Our objective was to determine if there is a difference in the systolic arterial pressure drop between male and female in subjects with abnormal myocardial perfusion scans.

METHOD: 270 consecutive patients who had drop in systolic arterial pressure of 10 mm/Hg or more while undergoing radionuclide myocardial perfusion studies using adenosine as a pharmacological stress agent in our institution. (Men 72, Women 198, Mean age: 60 years)

RESULTS: Subjects were divided into two groups. Group I- Subjects with fixed perfusion defect (previous myocardial infarction or scar) and Group II- Subjects with transient or partially reversible perfusion defect (myocardial ischemia).

	SAP drop ≥ 10mm/Hg		SAP drop ≥ 20 mm/Hg	
	Group I	Group II	Group I	Group II
Male	13/72 (18.1%)	10/72(14%)	8/48 (16.7%)	7/48 (14.6%)
Female	7/198 (3.5%)	9/198 (4.5%)	6/136 (4.4%)	5/136 (3.7%)
p value	.0005	.014	.01	.015

CONCLUSION: In subjects with transient or partially reversible and fixed perfusion defects, the incidence of drop in the SAP was significantly higher in male than female.

P5 VENTRICULAR EFFECTIVE REFRACTORY PERIOD PREDICTS CYCLE LENGTH OF INDUCED VENTRICULAR TACHYCARDIA. J. Kulhanek, H.J. DeAntonio, A. Movahed.

NOTES:

BACKGROUND: Ability to predict the cycle length of subsequently induced ventricular tachycardia may be useful for electrophysiologist performing programmed electrical stimulation. Previous studies evaluated baseline QRS and QT intervals as potential predictors.

OBJECTIVE: We studied the correlation of ventricular effective refractory period (VERP) and cycle length of induced ventricular tachycardia (VTCL).

METHOD: We performed analysis of 127 consecutive electrophysiology studies leading to induction of monomorphic ventricular tachycardia and analyzed the relationship of VERP with the cycle length of induced sustained monomorphic ventricular tachycardia. Programmed electrical stimulation was performed using standard catheter based method at a drive cycle length of 600 ms.

RESULTS: Significant linear correlation was demonstrated between VERP and VTCL with $r = 0.76$ ($p < 0.001$) and $r^2 = 0.58$. The linear regression function defined by the data set is: $VTCL (ms) = 1.5 \times VERP (ms) - 116$.

The VERP of less than 250 ms suggested VTCL under 300 ms in 100% of cases (41/41; $p < 0.001$). The VERP > 270 predicted VTCL over 300 ms in 76% of cases (31/41) and VTCL under 300 ms in 24% of cases (10/41).

DISCUSSION: The occurrence of rapid ventricular tachycardia with potential severe hemodynamic significance can be suspected at early stage of programmed electrical stimulation.

CONCLUSION: This study suggested presence of significant linear correlation between VERP and VTCL.

P6 CHANGE IN REGIONAL UPTAKE DIAMETER PREDICTS LOCATION OF CORONARY ARTERY STENOSIS IN PATIENTS WITH TRANSIENT ISCHEMIC DILATATION OF THE LEFT VENTRICLE. J. Kulhanek and A. Movahed.

NOTES:

BACKGROUND: Transient ischemic dilatation of the left ventricle (TID) was found to be mostly due to thinning of the area of radioactive uptake, rather than due to increase of its external diameter. Whether regional change in wall thickness with exercise in patients with TID predicts location of angiographically documented severe proximal coronary artery stenosis (CS) is not known.

METHOD: We analyzed 28 patients (age 60 ± 9 , EF 53 ± 12 , 75% males) with multivessel CS and TID demonstrated on standard Bruce treadmill exercise SPECT. Wall thickness in three main vessel territories was measured from short axis imaging at rest and exercise, and difference was calculated. Areas with decrease, or bellow average increase in wall thickness with exercise were designated as ischemic.

RESULTS: Location of CS was accurately predicted in 83% (24/28) cases.

CONCLUSION: Regional wall thickness measurement may provide further localizing information to standard interpretation of SPECT imaging of a severe coronary artery lesion in patients with TID.

P7 EFFECTS OF SIGNAL TRANSDUCTION INHIBITORS ON PROTEASE ACTIVATED RECEPTOR-INDUCED PLATELET AGGREGATION. Y.

Newton, R. A. Henriksen.

NOTES:

BACKGROUND AND OBJECTIVES: Thrombin-induced platelet aggregation contributes to the pathogenesis of thrombotic disorders. To identify differences in signaling that results from stimulation of the two thrombin receptors, protease activated receptor (PAR)-1 and PAR-4, the effects on platelet aggregation were determined for wortmannin, an inhibitor of PI 3-kinase, and phenylarsine oxide, a tyrosine phosphatase inhibitor.

METHODS: Inhibitors were added to washed platelets, in the presence of 2 mM Ca^{2+} , 2 minutes prior to adding agonists, thrombin, SFLLRN (PAR-1 agonist) or GYPGKF-NH₂, (PAR-4 agonist). Following agonist addition, aggregation of platelets was monitored in a platelet aggregometer for 5 minutes.

RESULTS: Wortmannin, 1 μM , inhibited platelet aggregation in response to low concentrations of agonists, but not at higher agonist concentrations. At 10 nM wortmannin, PAR-1 or PAR-4-induced aggregation was inhibited slightly or not at all. Phenylarsine oxide (1 μM) also inhibited aggregation, however, the patterns of inhibition for the three agonists differed. Thrombin (1nM) induced aggregation was partially inhibited, nearly complete disaggregation occurred in response to PAR-1 stimulation, and only shape change occurred in response to PAR-4 stimulation.

CONCLUSIONS: Because wortmannin inhibits PI 3-kinase with an IC₅₀ of 5 nM, the minimal effect of 10 nM wortmannin indicates that PI 3-kinase activity is not essential for irreversible aggregation. However, inhibition of aggregation by 1 μM wortmannin suggests that a kinase such as PI 4-kinase, MAP kinase or myosin light chain kinase participates in establishing irreversible platelet aggregation. Inhibition observed with phenylarsine oxide indicates that a phosphatase is required for PAR-4 induced platelet aggregation and also contributes to aggregation induced through PAR-1.

P8 CLEARANCE OF METFORMIN BY CONTINUOUS RENAL REPLACEMENT THERAPY (CRRT). M.J. Barchman, W.J. Meggs, F.

Barrueto.

NOTES:

Metformin is a biguanide oral antidiabetic agent used for treatment of type II diabetes mellitus. It is effective in augmenting insulin action while decreasing peripheral insulin resistance. Metformin is renally excreted by glomerular filtration and tubular secretion. The major disadvantage of metformin is its association with lactic acidosis which is the most consistent finding in the setting of overdose.

A 58 year old man with type II diabetes, hypertension, bipolar disease and chronic renal failure (creatinine = 1.7 mg/dl) presented after ingestion of forty 500 mg metformin tablets and twenty 240 mg diltiazem sustained release tablets. His initial serum lactate level was 22.8 mmol/l, arterial pH 7.15, AG 31, and potassium 5.0 meq/l. Hemodynamics deteriorated rapidly, therefore, CVVHD was performed with a blood flow = 180 ml/min, dialysate flow of 2.5 l/hr, and a Multiflow 60 kidney (Cobe) on a Prisma (Cobe) CRRT machine. Metformin levels were drawn from both patient and dialysate every 4 hours. The values demonstrated a severe overdose with the patient's initial metformin level being 110 $\mu\text{g/ml}$ (therapeutic range 1-2 $\mu\text{g/ml}$) and a clearance by CVVHD of 51 ml/min. Despite maximum aggressive support including intubation/ventilation, 3 pressors at maximal doses, transvenous pacemaker, intra-aortic balloon pump and CRRT, the patient died just 14 hours after presentation and 12.5 hours after initiation of dialysis. His terminal laboratory values were a lactate of 31.8 mmol/l, arterial pH =6.72, and AG =45.

In conclusion, metformin is readily removed by CRRT in the unstable patient. If clinical suspicion for overdose is high, aggressive dialytic intervention should be initiated immediately to avoid a fatal outcome. Caregivers must be aware of the contraindications to use of metformin.

P9

PREVALENCE OF PALLIATIVE CARE PATHWAYS – A SURVEY OF NORTH CAROLINA HOSPITALS. M. Franco, S.C. Ausband.

NOTES:

BACKGROUND AND OBJECTIVES: Clinical care pathways have been implemented for a variety of conditions to optimize the care of hospitalized patients. Such pathways for the palliation of pain would be expected to help optimize pain management. This survey was undertaken to determine the prevalence of palliative care protocols in North Carolina hospitals and to determine the characteristics of those hospitals with such pathways. This study was intended as an initial investigation as part of a palliative care pathway development program.

METHODS: A list of all hospitals in North Carolina was obtained and a questionnaire sent to the Chief of Staff at each institution. After a four-week response period, a follow-up questionnaire was mailed. Responses from those institutions that indicated that they did not treat medical patients were excluded, as were incomplete questionnaires. A total of 95 surveys were included in the data analysis (response rate 79%) representing 16,372 patient beds.

RESULTS: Thirty-three of the 95 institutions included in the data analysis reported having a palliative care pathway. Institutions with a palliative care pathway were more likely to be larger (276 vs. 117 beds), be a teaching institution, routinely care for terminally ill patients, and have a pain management team.

CONCLUSIONS: Palliative care pathways are uncommon in North Carolina hospitals. Those hospitals with palliative care pathways were more likely to be larger teaching facilities rather than smaller community hospitals. Additional studies should be undertaken to determine the effect of palliative care pathways and pain management teams on patient care.

P10

SPIRITUALITY EDUCATION OF PHYSICIANS: EXPERIENCES AND ATTITUDES. A. Klioze, M. Franco, D. Bynum, M. Monroe, and the RESPECT Group.

NOTES:

BACKGROUND AND OBJECTIVES: Our objective was to determine what types and in what setting physicians received spirituality education. We also wanted to examine the attitudes and characteristics of those desiring further training.

METHODS: A spirituality/religiosity survey including Spirituality Well Being Scale was administered to 444 physicians at seven centers: four in NC, one in FL, one in GA and one in VT. (74% General Internist, 21% family practitioners, 5% subspecialties).

RESULTS: Our analyses showed that 40% (n=444) of the physicians received some form of spirituality training. Twenty-nine percent received their training in medical school, 18% in residency and fellowships, and 23% as attendings. Medical school training included small group lecture series, residency and fellowships, and informal clinic discussions. Attendings received training via small groups or through books and journals. Forty-two percent of respondents desired further spirituality training while 20% did not and 38% were neutral. The physicians scoring highest (< 4 out of 6) on the Spirituality Well-Being Scale were more likely to desire further training. In addition, those physicians who attended worship service (48%) and those who agreed to the statement “faith alone could cure disease” (60%) were more likely to desire further training. Family physicians had a greater tendency to desire further training than General Internists.

CONCLUSION: Our survey showed that the majority of the spiritual training of physicians was received in medical school through formal lectures. After medical school, physicians relied on self-education through books and journals. Physicians scoring higher on the Spirituality Well-Being Scale, family practitioners, those who attended worship services, and those who believed that faith alone can cure disease were more likely to desire more training (p < .05).

P11 OLANZAPINE (ZYPREXA) OVERDOSE ASSOCIATED WITH ATYPICAL NEUROLEPTIC MALIGNANT SYNDROME (NMS). S.A. Waijen, G. Downie, C.A. Estrada.

NOTES:

Neuroleptic malignant syndrome (NMS) is a rare but life-threatening idiosyncratic reaction following the use of neuroleptic medications. The classic tetrad of symptoms includes muscle rigidity, fever, autonomic dysfunction, and mental changes. A rare clinical variant has been described with the use of specific neuroleptics. We report a case of atypical NMS following the use of a thienobenzodiazepine, olanzapine (*Zyprexa*). A 35-year-old Caucasian man with a history of hypertension and bipolar disease presented in a hyperosmolar hyperglycemic state with mental status changes. His history of bipolar disease required the use of olanzapine. Physical examination demonstrated tachypnea with an oral temperature of 102.7 F and disorientation. He was intubated for ventilator support and airway protection. His initial laboratory results, consistent for hyperosmolar hyperglycemic state, included pH 7.29, serum glucose 1800 mg/dL, BUN 99 mg/dL, creatinine 4.3 mg/dL and an anion gap 28. He failed to respond to conventional therapy and became increasingly hyperthermic to 106 F rectally, with leukocytosis and rising creatinine kinase levels in the absence of muscle rigidity. A trial of dantrolene was initiated and he displayed the typical temperature response but with no improvement of mental status. He continued on daily dantrolene with amantadine. A toxicology screen confirmed the presence of benzodiazepine with supratherapeutic levels of olanzapine by gas chromatography. Our patient developed progressive autonomic dysfunction and expired on day four. NMS is routinely reported after the use of potent neuroleptics including phenothiazines, thioxanthenes, or butyrophenones of which haloperidol (*Haldol*) is the prototype. Diagnosis is made by a set of major and minor criteria. Major criteria include fever, rigidity, and elevated creatine kinase levels. Minor criteria include tachycardia, abnormal blood pressure, tachypnea, altered mental consciousness, and leukocytosis. Atypical NMS is considered with a combination of two major plus four minor criteria. The pathophysiology of NMS has not been established, however, therapeutic interventions including dopamine, amantadine and bromocriptine lend support to the central dopamine depletion theory.

P12 CAVITARY LUNG LESIONS IN ACQUIRED IMMUNE DEFICIENCY SYNDROME PATIENT DUE TO CO-INFECTION OF RHODOCOCCUS EQUI AND MYCOBACTERIUM KANSASII. T. Wolf, S.R. Patel.

NOTES:

BACKGROUND AND OBJECTIVE: *Rhodococcus equi* is an opportunistic pathogen that is being recognized with increasing frequency among patients with decreased cell mediated immunity. It is variably Acid –fast and Gram-positve diphtheroid. Clinically the infection is indistinguishable from pulmonary tuberculosis as it is commonly mistaken as a diphtheroid or mycobacterium. Our intent is to increase awareness of *Rhodococcus equi* infection leading to cavitary pneumonia in AFB positive sputum.

METHOD: We report a patient with the acquired immunodeficiency syndrome who developed *Rhodococcus equi* and *Mycobacterium kansasii* co- infections leading to cavitary pneumonia.

RESULTS: The patient received intravenous vancomycin for five days followed by an 8 weeks course of oral ciprofloxacin for *Rhodococcus* infection and a four-drug regimen for the mycobacterial infection.

CONCLUSION: *Rhodococcus equi* infection should be considered in differential diagnosis of cavitary pneumonia in immunocompromised patients. We recommend a routine sputum culture to identify *rhodococcus* infection, when AFB stains are positive.

P13 UNUSUAL PRESENTATION OF SJOGREN'S SYNDROME. T. Aung, E. Anderson, S.R. Patel.

NOTES:

A 47-year-old woman presented with progressive muscle weakness, myalgia, and increased thirst. There was no recent history of diarrhea or diuretic use. The past medical history was significant for the use of artificial tears for dry eyes.

Laboratory results demonstrated severe hypokalemia with non-anion gap metabolic acidosis, urine pH of 7. The urinary anion gap was positive in the presence of acidemia thus establishing the diagnosis of distal renal tubular acidosis (DRTA). Autoimmune tests revealed Sjogren's syndrome as the underlying cause of the distal renal tubular acidosis.

Other tests looking for the secondary causes of SS were negative. The patient's symptoms resolved after potassium replacement and low dose steroids therapy. This case emphasizes that hypokalemia should be considered in every patient presenting with weakness and the evaluation of acid-base status is helpful in narrowing the differential diagnosis of severe hypokalemia.

The purpose of this case report is to increase awareness of this rare presentation of Primary SS.
