The Ochsner Journal 8:74–102, 2008

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Ochsner's 5th Annual Research Night
May 13, 2008
Ochsner Clinic Foundation
Jefferson Highway
New Orleans, LA

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R1 ETHICS, ECONOMICS AND EPIDURALS: THE JESS WEISS STORY

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R2 TARGETING RHO-KINASE IN CARDIOVASCULAR MEDICINE

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Background: Protein kinases are phosphorylation enzymes that control cellular signaling events and, when defective, may cause a wide range of diseases. One of these protein kinase pathways, the Rho/Rho-kinase pathway, has attracted much attention in various research fields, especially in the cardiovascular field. Although much is known about phosphorylation of proteins, less is known about the role of dephosphorylation of proteins in pulmonary circulation.

Objectives: We investigated the roles of Rho-kinase and nitric oxide (NO) in the regulation of tone in the pulmonary vascular bed in the anesthetized, chest of an intact rat.

Methods: For hemodynamic studies, systemic arterial pressure was measured via femoral artery catheterization, whereas pulmonary arterial pressure was measured by a right-heart catheterization technique. L-NAME (Sigma, St. Louis, Mo.) and fasudil (LGM Pharmaceuticals, Boca Raton, Fla.) were dissolved in 0.9% saline. Solutions were prepared on a frequent basis and kept on ice during the course of an experiment.

Results: Intravenous injections of L-NAME, an NO synthase inhibitor, in doses of 25–100 mg/kg caused a marked increase in pulmonary arterial pressure. However, this increase in pulmonary arterial pressure could be reversed by intravenous injections of sodium nitroprusside, an NO donor, or fasudil, a Rho-kinase inhibitor.

Conclusions: The results of these experiments indicate that pulmonary hypertension induced by NO synthase inhibition can be reversed and that pulmonary arterial pressure can be normalized by sodium nitroprusside, an agent that decreases intracellular calcium levels, or by fasudil, an agent that decreases calcium sensitivity by enhancing dephosphorylation of myosin light chains in pulmonary vascular smooth muscle cells. The results also show that NO is important in the normal maintenance of low resting pulmonary arterial pressure and that pulmonary hypertension can be reversed by agents that decrease intracellular calcium levels or reduce calcium sensitivity in pulmonary artery smooth muscle cells.

R3 IMPROVING OPERATING ROOM EFFICIENCY ON A LABOR AND DELIVERY UNIT

Russo MB, MD[1]; Hart SR, MD[1]; Byrd KJ Jr, MD[2]; Dupre JM, RNC, BSN[2]; Nossaman BD, MD[1]

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Background: The elective surgical schedule in labor and delivery is often difficult to fulfill because of necessary interruptions due to urgent and emergent obstetrical cases. Moreover, poor communication results in further inefficiency and the potential for adverse outcomes. Although a number of studies have investigated the issue of main surgical operating room efficiency, less is known about the labor and delivery operating room (LDOR). The purpose of our study was to improve LDOR efficiency for scheduled cesarean deliveries on our unit.

Methods: A Labor and Delivery Safety Committee (LDSC) was developed, consisting of representatives from anesthesiology, obstetrics, and nursing to identify problems, develop realistic solutions, and set goals and deadlines for enhancing throughput. LDSC developed critical pathways for enhancing throughput and educated all personnel on the new goals. After these pathways were implemented, data were collected and analyzed using unpaired Student's t-tests and a correction factor (Bonferroni) for multiple comparisons when indicated.

Results: Data were analyzed for 124 consecutive elective cesarean deliveries occurring after the implementation of the revised LDOR pathways. After the intervention, the total OR time decreased: 100.5 ± 25.1 minutes before the intervention vs. 93 ± 21.3 after the intervention ($p<0.01$).

Conclusions: Our data indicate that significant improvement may occur in some critical time intervals during cesarean delivery following the implementation of a multidisciplinary team and revised LDOR pathways. Although the overall gain in time was small (7 minutes), revising the LDOR pathway led to better communication among all care providers, set expectations, and reduced frustrations on our unit.

R4 A COMPARISON OF EREM/FNB TO PCEA FOR POSTOPERATIVE PAIN CONTROL IN TOTAL KNEE REPLACEMENTS

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Background: Because of the evolving anticoagulation policies used in total knee replacement surgeries and the reported risk of neuraxial analgesia, there is movement away from using patient-controlled epidural analgesia (PCEA) for pain control. These concerns open the door for other regional modalities in postoperative analgesia, including the use of extended-release epidural morphine (EREM) combined with a femoral nerve block (FNB).

Methods: This study was a prospective observational chart review using recent historical controls in patients undergoing unilateral total knee replacements. Data compared were the 0-, 24-, and 48-hour postoperative pain scores using the visual analogue scale (VAS), the incidence of side effects, and the time spent in the postanesthesia care unit (PACU).

Results: The 24-hour postoperative pain scores were lower in the EREM/FNB group (2.0 ± 0.7) compared to the PCEA group (4.2 ± 0.7, $p=0.085$). The PACU times were shorter in the EREM/FNB group (2.3 ± 0.3 hours) compared to PCEA (3.4 ± 0.4 hours, $p=0.069$). Side effects were similar between the two groups, with the exception of sedation and nausea/vomiting, which were significantly worse in the EREM/FNB group.

Conclusions: The lower mean VAS score at 24 hours in the EREM/FNB group shows a positive trend that is clinically relevant. The trend toward shorter PACU times represents a significant opportunity for cost-identification analysis. This study is limited by its observational nature and the small number of patients involved. Nevertheless, this study demonstrates a therapeutic equivalence to PCEA and that it may be more cost effective.

R5 PULMONARY DISEASE: A FREQUENT CAUSE OF ATRIAL FLUTTER

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Background: Typical atrial flutter is a commonly encountered reentrant arrhythmia in which the entire tachycardia circuit is contained within the right atrium. Although the rhythm can be effectively treated, the etiology is rarely found. We hypothesized that pulmonary disease may contribute to the formation of atrial flutter by inducing abnormalities of the right atrium. A literature search found few data linking the two disorders.

Methods: In this retrospective chart review, we evaluated the prevalence of pulmonary disease in 150 patients with typical atrial flutter (flutter group), as diagnosed during electrophysiologic study. For comparison, we created a group of 150 matched controls (control group) selected from our hospital's database. Controls were matched for age, sex, ejection fraction, and body mass index (BMI). The prevalence of pulmonary disease in the atrial flutter group was then compared to the prevalence observed in the matched controls.

Results: The flutter group was quite similar to the control group in terms of age (68 vs. 69 years, respectively), ejection fraction (49% vs. 50%), BMI (30 vs. 30); also, both groups were 74% male. Patients in the flutter group were more than three times as likely to carry a diagnosis of pulmonary disease as compared to the matched controls (44/150, or 29.3%, vs. 13/150 or 8.7%, respectively). The specific pulmonary diagnoses observed in the flutter and control groups were mostly chronic obstructive pulmonary disease (COPD), obstructive sleep apnea, and sarcoid lung disease.

Conclusions: Although our study does not establish a cause-and-effect relationship, it certainly reveals a strong association between atrial flutter and pulmonary disease. Perhaps patients diagnosed with atrial flutter should undergo screening for occult sleep apnea and COPD.

R6 THE IMPACT OF CLINICAL RESEARCH ON PRACTICE AND HOSPITAL PERFORMANCE IN CARDIAC PATIENTS

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Background: In January 2005, the Centers for Medicare and Medicaid Services (CMS) issued a National Coverage Determination to include reimbursement for Automatic Implantable Cardiac Defibrillators (AICD/ICD) for cases of primary prevention. This decision was based on the Multicenter Automatic Defibrillator Implantation (MADIT II) and Sudden Cardiac Death in Heart Failure (SCD-HeFT) clinical trials. Prior to this time, facilities were only reimbursed for secondary prevention, i.e., patients experiencing SCD or spontaneous arrhythmia. However, implantation for primary prevention ensued, and data collection was mandated by CMS as a means of surveillance. CMS named the American College of Cardiology's National Cardiovascular Data Registry as the official data repository in October 2005. Subsequently, mandated data collection became the metric for performance improvement.

Results: During 2006, there was a downward trend in the occurrence of adverse events. In the first three quarters of 2007, no adverse events were reported. There has been increased adherence to the recommendations for beta-blockers and angiotensin-converting enzyme inhibitors/angiotensin-receptor blockers prescribed for patients with an ejection fraction of 40% or less. However, these figures may be higher because of patients who are excluded for contraindications for these prescriptions. The greatest percentages of patients undergoing implant/replacement procedures are receiving the dual chamber ICD. The length of stay for these procedures has decreased. However, a limitation to the analysis of this metric is the inclusion of primary and secondary prevention cases within the same measure.

R7 LOW RECOGNITION OF METABOLIC SYNDROME AND RELATED CARDIOMETABOLIC FACTORS IN CARDIOLOGY PRACTICE

Fujiyoshi A, MD, MPH[1]; Murad H, MD[2]; Luna, MA, MD[3]; Rosario A, MD[4]; Paniagua D, MD[5]; Molina J, MD[5]; Ali S, MD[3]; Yao D, MD[5]; Lopez M, BS[2]; Joslin S, BS, Med[2]; Lopez-Jimenez F, MD, MSc[2]

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R8 DOES BODY COMPOSITION IMPACT SURVIVAL IN PATIENTS WITH ADVANCED HEART FAILURE?

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Lavie CJ, Milani RV, Artham SM, Olivier AC, Ventura HO. Does body composition impact survival in patients with advanced heart failure. Circulation 2007;116(16):II-360.

R9 THE DISPARATE EFFECTS OF OBESITY AND LEFT VENTRICULAR GEOMETRY ON MORTALITY IN 8,088 ELDERLY PERSONS WITH PRESERVED SYSTOLIC FUNCTION

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Lavie CJ, Milani RV, Patel D, Artham SM. Disparate effects of obesity and left ventricular geometry on mortality in 8,088 elderly with preserved systolic function. Journal of the American College of Cardiology 2008;51(10):A107.

R10 COMBATING THE OBESITY PARADOX—THE BENEFITS AND SAFETY OF PURPOSEFUL WEIGHT LOSS IN OVERWEIGHT AND OBESE CORONARY PATIENTS

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Lavie CJ, Milani RV, Artham SM. Combating the obesity paradox: benefits and safety of purposeful weight loss in overweight and obese coronary patients. Journal of the American College of Cardiology 2008;51(10):A367.

R11 VENTRICULAR-ARTERIAL INTERACTIONS PREDICT SURVIVAL IN 6,762 PATIENTS WITH LEFT VENTRICULAR HYPERTROPHY AND PRESERVED EJECTION FRACTION

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Milani RV, Lavie CJ. Ventricular-arterial interactions predict survival in 6,762 patients with left ventricular hypertrophy and preserved ejection fraction. Journal of the American College of Cardiology 2008;51(10):A132.

R12 DEFECTIVE INSULIN SIGNALING INDUCES A RELATIVE RESISTANCE TO RAPAMYCIN

Moss SC, MS; Lightell D Jr, BS; Woods TC, PhD

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Woods TC, SC Moss. Defective insulin signaling induces a relative resistance to rapamycin via loss of mTOR regulation of p27Kip1 protein levels [abstract number TCT 107]. American Journal of Cardiology 2007;100(8):43L.

R13 THE OPTIMAL TREATMENT OF RENAL ARTERY IN-STENT RESTENOSIS: REPEAT STENT PLACEMENT VERSUS ANGIOPLASTY ALONE

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Background: Although stent placement for renal artery stenosis has been demonstrated to be superior to balloon angioplasty for de novo renal artery lesions, the optimal therapy for in-stent restenosis (ISR) remains unclear.

Objectives: We investigated whether repeat renal artery stent placement, compared to treatment with balloon angioplasty alone, results in better patency in patients presenting with renal artery ISR.

Methods: Between January 1997 and August 2006, 34 consecutive patients (41 renal arteries) with ISR were treated at the discretion of the operator with balloon angioplasty or repeat stent placement. Quantitative angiography was performed before and immediately after intervention and at follow-up. Angiographic follow-up was obtained for clinical indications in 75% of lesions, and routine noninvasive follow-up imaging was obtained in 95% of lesions.

Results: Repeat renal artery stent placement demonstrated improved patency compared to balloon angioplasty alone, with a 58% reduction in recurrent ISR (29.4% vs. 71.4%, $p = 0.02$) and a 30% reduction in follow-up diameter stenosis (41% vs. 58.2%, $p = 0.03$). The repeat stent group also had better secondary patency ($p = 0.05$) and a greater freedom from repeat ISR ($p = 0.01$) when compared to balloon angioplasty alone. A trend favoring repeat stent placement for cumulative freedom from target vessel revascularization ($p = 0.08$) was found.

Conclusions: Repeat stent placement appears to result in superior patency compared to balloon angioplasty alone for the treatment of renal ISR.

R14 THE IMPACT OF LEFT ATRIAL VOLUME INDEX AND LEFT VENTRICULAR GEOMETRY ON MORTALITY IN 11,039 PATIENTS > 70 YEARS OF AGE WITH A NORMAL EJECTION FRACTION

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R15 DETERMINING THE ROLE OF BMP-4 IN VASCULAR CALCIFICATION AND ITS CLINICAL IMPLICATIONS

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R16 WHOLE BODY IMAGING AS A TOOL FOR CANCER RESEARCH

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Objectives: Our objective is to develop the latest imaging techniques to accurately visualize tumor formation in intact mice. This new technique is useful for quantitative tumor imaging without sacrificing the animals. The advantages over currently used techniques include earlier detection, more accurate measurements, and the ability to access long-term treatment efficacy as well as relapse.

Methods: To establish green fluorescent protein (GFP) or luciferase-expressing B lymphoma cell lines, the cells were transduced with lentiviral vector-encoding GFP or luciferase. The labeled cells were injected subcutaneously in the flanks of immunocompromised mice, and the animals were imaged twice weekly. The results were analyzed with the software package Living Image 3.0 (Caliper Life Sciences, Hopkinton, MA).

Results: GFP- or luciferase-expressing cells resulted in tumor formation under the same conditions as the unperturbed parent cells. When injecting labeled cells, the time to detect tumor tissue was significantly shortened as compared to standard caliper measurements. Imaging can detect very few cells, even before tumor formation can be measured, and is less dependent on growth patterns than caliper measurements. The numerical data collected by this technique were very accurate and objective, unlike in caliper measurement.

Conclusions: The results suggest that the use of the GFP-producing cell lines with imaging systems will provide a significant improvement to the current methods for monitoring and quantifying tumor formation in mice. In addition, the noninvasive nature of the technique allows for long-term studies.

R17 NOTCH SIGNALING FROM FOLLICULAR DENDRITIC CELLS IS IMPORTANT IN THE SURVIVAL AND DIFFERENTIATION OF B CELLS

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Objectives: The evolutionarily conserved Notch-signaling pathway has been shown to play a critical role in determining cell fate choices during the development of many cell lineages. Members of Notch receptors mediate communication between neighboring cells during cell-cell contact by binding to ligands expressed on adjacent cells. Ligand-mediated activation of Notch induces the proteolytic release and nuclear translocation of the Notch intracellular domain. The activated intracellular domain of Notch receptors interacts with the DNA-binding protein CBF1 to directly modulate the expression of genes that influence proliferation, differentiation, and apoptosis. Our objective was to characterize its role in mature human B cell differentiation in the germinal center (GC).

Methods: To investigate the function of Notch signaling in GC-B cell differentiation, we first examined the expression of Notch ligands on follicular dendritic cells (FDC) and Notch receptors on GC-B cells by reverse transcriptase polymerase chain reaction and immunostaining. The function of Notch signaling was examined by adding Notch signaling inhibitors in the coculture of GC-B cells and FDC. Then, cell apoptosis, division, and differentiation were examined.

Results: FDC in GC produced Delta-like 1 (Dll-1) and GC-B cells expressing Notch receptors 1 and 2. The blockade of the Notch signaling pathway reduced the survival and consequently the proliferation of GC-B cells. Furthermore, Notch signaling was active in GC-B cell differentiation into plasma cells.

Conclusions: These results indicate that the Notch ligand Dll-1, when expressed on FDC, provides a survival signal to GC-B cells and supports GC-B cell differentiation into plasma cells. These data imply that controlling Notch signaling would be a potential therapeutic candidate for B-cell lymphomas originating from GC and autoimmune diseases.

R18 IL-21 IS THE MOST POTENT CYTOKINE IN INDUCING PLASMA CELL GENERATION AND ITS IMPLICATION IN THE DEVELOPMENT OF AUTOIMMUNE DISEASES

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Objectives: During the humoral immune response, cytokines are well known for playing important roles in B cells' proliferation, plasma cells' (PC) generation, and antibody production. Interleukin-21 (IL-21) is a recently identified type I cytokine produced by activated T cells. IL-21 has a remarkable capacity to induce the differentiation of B cells into Ab-producing PC in vitro, which is consistent with the in vivo observation made with IL-21 transgenic and IL-21 receptor knock-out mice. However, no clear information has been presented in detail on how IL-21 affects the differentiation of germinal center (GC)-B cells. Hence, we investigated the effect of IL-21 in the course of GC-B cell differentiation.

Methods: Using our in vitro experimental model that mimics the in vivo GC microenvironment, we dissected the IL-21 role in each differentiation stage of GC-B cells (centroblast, preplasmablast, and plasmablast), by comparing them with IL-2/IL-10, previously known to induce PC generation in a long-term culture of GC-B cells.

Results: Among lymphocyte subsets from human tonsils, IL-21R was expressed at the highest level in PCs. In the in vitro culture of GC-B cells, IL-21 induced robust proliferation and Ab production in both centroblasts and preplasmablasts at a more accelerated rate than IL-2/IL-10, which was confirmed by the expression of PC-associated transcription factors. However, in plasmablasts, IL-2/IL-10 emerged as potent immunoglobulin G-secreting cell inducers, although IL-21 and IL-2/IL-10 are equipotent on cell proliferation. Finally, the effect of IL-21 on PC generation appeared to be mediated mainly through the STAT3-signaling pathway.

Conclusions: IL-21 is the most potent cytokine for early stage Ab-secreting PC generation within lymphoid tissue. IL-21 may contribute to the development of autoimmune diseases, including systemic lupus erythematosus, rheumatoid arthritis, and scleroderma. Targeting IL-21 may represent a novel strategy for treating Ab-mediated autoimmune diseases.

R20 EFFECTS OF DISASTERS ON QUALITY OF LIFE IN HYPERTENSIVE PATIENTS: IMPLICATIONS FOR CLINICAL PRACTICE

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Stanley E, Krousel-Wood MA, Muntner P, Frolich E, Re R. Effects of disasters on quality of life in hypertensive patients: implications for clinical practice. Journal of Investigative Medicine 2008;56:488.

R21 VALIDATION OF THE 8-ITEM MORISKY MEDICATION ADHERENCE SCALE (MMAS) WITH PHARMACY FILL DATA IN PATIENTS WITH HYPERTENSION

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Krousel-Wood MA, Islam T, Webber LS, Morisky DE, Muntner P. Validation of the 8-item Morisky Medication Adherence Scale (MMAS) with pharmacy fill data in patients with hypertension. Poster presentation at American Heart Association 48th Annual Conference on Cardiovascular Disease Epidemiology and Prevention, Colorado Springs, Colorado, March 14, 2008. Abstract in press: *Circulation 2008*

R22 A COMPARISON OF SELF-REPORTED VERSUS ADMINISTRATIVE RACE DATA

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Stanley E, Wood R, Kergosien L, Krousel-Wood MA. A comparison of self-reported versus administrative race data. Journal of Investigative Medicine 2008;56:485.

R23 VARIATIONS IN PERIOPERATIVE STEROID MANAGEMENT AMONG SURGICAL SUBSPECIALISTS

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Objectives: We examined whether physicians of multiple specialties to determine whether practice patterns have evolved in perioperative steroid-dosing regimens and whether dosing schedules differ across multiple specialties.

Methods: Questionnaires were mailed within the United States to members of the American Society of Colon and Rectal Surgeons (CRS) (n=1,523), the American Society of Transplant Surgeons (TS) (n=988), the American Society of General Surgeons (GS) (n=2,750), and the American Association of Endocrine Surgeons (ES) (n=278). Survey items addressed physician age, gender, geographic region, practice type, and estimated practice experience with corticosteroid-dependent patients. We also explored clinical factors considered in perioperative steroid dosing, whether perioperative steroids are managed by the surgeon alone or in collaboration with medical colleagues, and the most common intravenous and oral taper regimens employed.

Results: A total of 450 surveys were returned for analysis. Sixty-four respondents had either retired or answered <50% of the questions and were excluded, leaving 386 (211 CRS, 116 GS, 45 TS, and 14 ES) for analysis. Although the majority of respondents managed both the perioperative (85.5%) and steroid tapers (77%) themselves, TS and ES were significantly less likely to utilize other physicians than GS or CRS ($p<0.001$). Furthermore, the preoperative steroid dose most frequently utilized by all groups was hydrocortisone or solucortef 100 mg intravenously (IV) (76% CRS, 64% GS, 22% TS, and 93% ES). Most CRS (44.5%) and GS (24.1%) reported tapering IV steroids over 3 days postoperation, while TS (33.3%) and ES (50%) return patients to prednisone within 1–2 days. There was a statistically significant difference in the number of steroid regimes ($p<0.001$). Also, there was no consistency in discharge steroid use, with the majority of CRS (46.4%) tapering prednisone to preoperative doses over >21 days postdischarge; GS (19%) over <21 days, and TS (20%) and ES (21.4%) over 21 days

Conclusions: In the absence of standard guidelines for perioperative corticosteroid administration, significant variations exist in the regimens utilized by surgeons in multiple specialties.

R24 THE RISK OF BLEEDING AND THROMBOEMBOLIC EVENTS IN PATIENTS UNDERGOING COLONOSCOPIC EVALUATION ON CLOPEDIGREL (PLAVIX)

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Background: Clopidogrel (Plavix) use has increased exponentially over the past 5 years. While it is assumed that taking clopidogrel will increase the risk of bleeding when undergoing a colonoscopic evaluation, one must balance that against the risk of thromboembolic events.

Objectives: The aim of this project was to determine a safe and effective guideline for withholding clopidogrel that would minimize thromboembolic events and the risk of bleeding during the periendoscopy period.

Methods: We prospectively followed patients undergoing colonoscopic evaluation while taking clopidogrel between February 2006 and September 2007. Patients were instructed to withhold clopidogrel 7–10 days prior to the procedure and for 1 week postprocedure if a polypectomy was performed. Patients with diagnostic procedures restarted the clopidogrel the following day. All patients were contacted by telephone 60 days postprocedure to determine whether they had experienced either bleeding or any thromboembolic event.

Results: We followed 175 patients who underwent colonoscopy during the specified period: 50 women (mean age: 68.7 ± 1.3 years) and 125 men (67.2 ± 0.8yrs). The primary indications for clopidogrel were coronary artery disease (n=67), cardiac stents (n=32), and cerebrovascular accident (n=21).The indications for colonoscopy were screening in 89, previous polyps in 46, bleeding/anemia in 22, and other reasons in 18. A total of 89 patients underwent polypectomy with either snare or hot biopsy forceps, 39 procedures were diagnostic, and 2 patients underwent cold mucosal biopsies. The mean time the patients were off clopidogrel was 6.2 ± 0.2 days. No difference between patients who had polypectomies and those who did not (5.8 vs. 6.3 days; $p=0.301$) was found. Two postpolypectomy bleeds occurred, both on postoperative day 7, and no thromboembolic events happened during the follow-up.

Conclusion: Patients requiring antiplatelet therapy can safely undergo colonoscopy with minimal risk of postpolypectomy bleeding or thromboembolic events based on this management protocol.

R25 PULMONARY VASODILATOR RESPONSES TO SODIUM NITRITE ARE MEDIATED BY A XANTHINE OXIDOREDUCTASE SENSITIVE MECHANISM

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Background: Recent evidence has shown that nitrite can be reduced to nitric oxide (NO) and acts as a storage form rather than an inactive end product of NO oxidation in circulation. It has been reported that inhaled nitrite acts as a selective hypoxia-sensitive vasodilator in pulmonary circulation. However, questions about the effects and mechanism of the action of nitrite in the pulmonary vascular bed remain unanswered.

Methods: The effects of intravenous injections of sodium nitrite on the pulmonary vascular bed of intact rats were investigated under baseline as well as elevated tone conditions. The effects of inhibitors of xanthine oxidoreductase and NO synthase and of hypoxia were also investigated.

Results: These studies showed that intravenous injections of sodium nitrite decreased pulmonary and systemic arterial pressure and increased cardiac output. Decreases in pulmonary arterial pressure were enhanced when the baseline tone was increased with U46619; decreases in pulmonary and systemic arterial pressure in response to nitrite were slower in onset than responses to nitroprusside. Vasodilator responses to sodium nitrite were enhanced by L-NAME and were inhibited by allopurinol in a dose that did not alter responses to nitroprusside. Decreases in pulmonary arterial pressure in response to sodium nitrite were not altered by hypoxia.

Conclusions: The present study shows that nitrite has significant vasodilator activity in the pulmonary vascular bed that is dependent on tone, enhanced by NO synthesis inhibition, mediated by an allopurinol-sensitive mechanism, and not modified by hypoxia.

R26 THE IMPACT OF HMG-COA REDUCTASE INHIBITORS ON RENAL FUNCTION IN PATIENTS WITH SHOCK

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Abstract published in *Chest*.

R27 THE MONTHLY ADMINISTRATION OF A NOVEL PARATHYROID HORMONE—COLLAGEN-BINDING DOMAIN FUSION PROTEIN—INCREASES BONE MINERAL DENSITY BY MORE THAN 10 PERCENT IN NORMAL MICE

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Background: Parathyroid hormone (PTH) is an anabolic bone agent that is superior to bisphosphonate compounds in the treatment of osteoporosis; however, this effect is only observed with daily subcutaneous injections of PTH. Continuous administration is catabolic in bone, and thus continuous-release depot forms of PTH result in bone erosion.

Methods: We prolonged the duration of the PTH effect while retaining the anabolic activity in bone by synthesizing a fusion protein (PTH-CBD) of human PTH (1-33) and the collagen-binding domain of the ColH collagenase from *Clostridium histolyticum*. In-vitro collagen-binding assays indicate that the PTH-CBD fusion protein retains its ability to bind collagen and activate the PTH receptor.

Results: Weekly injections of PTH-CBD in normal young female C57BL/6J mice (Jackson Laboratories, Bar Harbor, Me.) for 8 weeks resulted in a 16.7% increase in spinal bone mineral density. Serum alkaline phosphatase rose significantly, as expected. No side effects were observed, the animals did not develop hypercalcemia, and there was no evidence of bone tumors. The monthly administration of PTH-CBD increased bone mineral density by 13% after 4 months and 12% after 6 months, compared to the monthly administration of PTH (1-34) or a vehicle control. These increases were sustained for at least 5 months after the final injection of PTH-CBD.

Conclusions: This novel fusion protein represents an application of a new drug design concept using individual protein domains to create an agent with unique properties, in this case allowing the superior anabolic effect of PTH to be obtained with the dosing convenience of the bisphosphonate compounds, at least in mice.

R28 IS INTRAOPERATIVE PARATHYROID HORMONE MONITORING (IPM) NECESSARY IN ROUTINE, MINIMALLY INVASIVE PARATHYROIDECTOMY?

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Background: Intraoperative parathyroid monitoring (IPM) has been widely accepted as an adjunct for complex parathyroid cases. However, no randomized controlled data exist to support its use in all parathyroid explorations. Furthermore, rapid-turnaround, intact parathyroid assays are not readily available in many hospitals where surgical capabilities are adequate for parathyroid exploration.

Methods: This was a retrospective review of 374 patients who underwent parathyroid exploration at our facility from January 2000 through December 2007. To be eligible for the study, patients had to have primary hyperparathyroidism managed by a minimally invasive parathyroidectomy (MIP), a clearly positive preoperative sestamibi scan showing a solitary focus of hyperfunctioning parathyroid tissue, no prior thyroid or parathyroid surgery, and no risk factors for multi-gland disease. Thus, 166 patients were included in the study, all of whom underwent MIP; IPM was used in 47 patients and not used in 119 patients.

Results: In both groups, no significant difference in the cure rate (97%) or in the requirement for an extended exploration could be found. However, the length of time in the operating room and the subsequent cost was significantly different.

Conclusions: In our study population, the addition of IPM to sestamibi did not improve operative outcome. IPM significantly increased operative time and added cost to MIP. Our data show that IPM is not necessary for patients with primary hyperparathyroidism who have no risk factors for multi-gland disease and whose sestamibi scan clearly visualizes a single hyperfunctioning gland.

R29 B CELL LYMPHOMA STEM CELLS

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Background: Clinical heterogeneity and wide variation in survival rates among patients are characteristics of B cell lymphoma, the most common hematological malignancy in adults. Follicular lymphomas (FL) are often indolent during the early stage but become more aggressive, with ultimate fatality. Dependable biomarkers to help predict the disease course are not identified, and specific microenvironmental factors may orchestrate the survival of drug-resistant lymphoma cells during therapy. These drug-resistant cells are thought to be derived from B cell lymphoma stem cells (BCL-SC). The presence of BCL-SC may serve as an indicator of poor chemotherapy responses and unfavorable clinical prognoses. The identification and characterization of BCL-SC may be of great prognostic significance.

Objectives: Our goal was to identify BCL-SC.

Methods: BCL-SC from one FL and three Burkett lymphoma cell lines were enriched by the isolation of a minor Hoeschst-effluxing, verapamil-sensitive side population (SP). The SP was characterized by assessment for cancer stem cell properties, and stem cell marker expression was confirmed in the FL patient biopsies.

Results: Follicular dendritic cells (FDC) provided the essential microenvironment for B cell lymphoma cell proliferation. Both the soluble factors and the cell–cell contact provided by FDC are required for B cell lymphoma cells to form tumors in nonobese diabetic/severe combined immune deficiency mice in serial transplantation, thus indicating the presence of BCL-SC. Enriched BCL-SC expressed higher levels of stem cell genes such as Oct-4, Rex-1, Nanog, and Sox-2 and were highly tumorigenic. The expression of stem cell markers ABCG2 and Oct 3/4 were confirmed in FL patient lymph node biopsies.

Conclusions: The identification of BCL-SC biomarkers and the regulatory microenvironmental factors will provide the basis for developing a BCL-SC specific therapeutic strategy to better treat FL.

R30 LYMPH NODE FOLLICULAR DENDRITIC CELLS AND THEIR SIGNALING MOLECULES FOR BREAST CANCER CELL GROWTH

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Objectives: During tumor progression, breast cancer cells metastasize to distant organs. The lymph node (LN) status of breast cancer patients is the single best indicator of disease-free survival and overall survival. However, little is known about how cancer cells grow and form tumors in LN. Follicular dendritic cells (FDC), a type of LN stromal cells, promote mammary carcinoma (MMCA) growth in LN. FDC are a major producer of microenvironmental factors. Our objective was to identify FDC factors critical for breast cancer growth and metastasis in LN.

Methods: The hypothesis that FDC are a tumor promoter in LN was tested using the xenograft model, in which MMCA cell line MCF7-ras cells tagged with green fluorescent proteins were inoculated with or without the FDC line—HK cells—and tumor growth was quantified by whole body molecular imaging. The interactions between MCF7 and FDC/HK cells as well as the vascularization in the tumor tissues were examined with a deconvolution microscope after being stained with several cell and protein markers. The hypothesis was further investigated by identifying the FDC-signaling molecules (FDC-SM) that increase tumor cell growth and angiogenesis.

Results: FDC enhanced MMCA cell proliferation, angiogenesis, and tissue remodeling to promote tumor formation.

Conclusions: FDC are critical for the progression of breast cancer. The identification of FDC-SM is important to determine molecular targets for efficient combination therapy.

R31 LYN KINASE IS AN IMPORTANT COMPONENT OF THE SIGNAL TRANSDUCTION PATHWAY IN THE APOPTOTIC RESISTANCE OF B-CHRONIC LYMPHOCYTIC LEUKEMIA (CLL) CELLS

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Background: B-chronic lymphocytic leukemia (B-CLL) is characterized by the failure of programmed cell death (apoptosis). In spite of some progress in therapy, the neoplasm remains incurable. Thus, a better understanding of molecular biology is critical to its pathogenesis and treatment.

Objectives: Our goal is to explore the signal transduction pathways underlying the apoptotic defect in B-CLL cells. To that end, we address the contribution of Lyn, an Src-family kinase.

Methods: B-CLL cells were isolated from discarded and de-identified blood samples obtained from untreated B-CLL patients. Purified nonmalignant B cells from buffy-coat preparations were used as controls. A Lyn-specific inhibitor peptide and a Src-kinase inhibitor, PP2, were used to investigate the role of Lyn kinase in the modulation of apoptosis-regulating genes by reverse transcriptase-polymerase chain reaction and apoptosis by Annexin V staining.

Results: The treatment of B-CLL cells but not nonmalignant B cells with Lyn-specific inhibitor (10 μM) for 24 hours resulted in an Annexin expression increase from 5.1 ± 1.1 to 40.6 ± 8.4 ($P = .003$). Furthermore, the treatment of B-CLL cells with PP2 (10 μM) for 24 hours resulted in a more than 50% decrease in the expression of the antiapoptotic genes Bcl-2, Mcl-1, and XIAP, as well as a decrease in cell survival. These decreases correlated with markedly reduced vascular endothelial growth factor production and nuclear factor kappa B activation; both are known to display antiapoptotic properties when activated in B-CLL cells.

Conclusions: Our study suggests that Lyn kinase is a potential target for pharmacological intervention in the treatment of B-CLL.

R32 DIFFERENCES IN THE TREATMENT AND OUTCOMES OF NON-SMALL CELL LUNG CANCER IN LOUISIANA COMPARED TO REST OF THE UNITED STATES: A NATIONAL CANCER INSTITUTE SURVEILLANCE, EPIDEMIOLOGY, AND END RESULTS ANALYSIS

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R33 URINARY CATHETER UTILIZATION PRACTICES IN GENERAL MEDICAL/SURGICAL PATIENTS

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Background: Catheter-associated urinary tract infections (CAUTI) are the most common hospital-acquired infections in the United States, with indwelling urinary catheters (IUC) placed in 12–16% of all inpatients. The daily risk of CAUTI varies from 3% to 7%. Limiting IUC placement and the duration of use remain the best prevention methods. This study assesses our current IUC placement practices in the Emergency Department (ED) and on the medical/surgical floors.

Methods: Over a 3-week period, ED admissions to Medicine were randomly selected from 10 24-hour shifts and analyzed by physician observation and electronic medical record review. Patient care documentation provided presumptive indications for IUC placement. CAUTI were identified by Centers for Disease Control and Prevention guidelines.

Results: Of 209 patients, 40 (19.1%) received IUC during hospitalization. Catheter days (CD) totaled 183 for all patients and 102 days for 8 patients who developed CAUTI. Urinary catheters were placed more frequently than commonly reported. Additionally, indications for placement were present in only 50% of patients who had IUC. Patients developing CAUTI had IUC in place four times longer than those who did not.

R34 THE BLOCKADE OF THE RENIN-ANGIOTENSIN SYSTEM PREVENTS SALT-OVERLOAD RENAL VASCULAR INJURY

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Background: We have previously demonstrated that dietary salt excess induces cardiovascular and renal injury and that the local tissue renin-angiotensin system (RAS) may mediate heart damage.

Objectives: We sought to examine whether RAS is involved in the pathogenesis of renal damage induced by salt overload.

Methods: Male, 8-week-old spontaneously hypertensive rats (SHRs) were divided into 4 groups. The control group was given regular chow; the remaining 3 groups were given chow with 8% salt. In addition, the third group was given the angiotensin II receptor blocker (ARB) candesartan (10 mg/kg/day), and the fourth another ARB, losartan (30 mg/kg/day). Systemic hemodynamics and indexes of renal function were determined after 8 weeks of treatment.

Results: Compared with the controls, mean arterial pressure increased in salt-loaded rats (182±5 vs. 164±4 mmHg) and was not decreased by candesartan (178±5 mmHg) or losartan (183±4 mmHg). Indexes of renal function, including renal blood flow (1.7±0.3 vs. 3.2±0.4 mL/min/g), glomerular filtration rate (0.5±0.1 vs. 1.1±0.1 mL/min/g), and urinary protein excretion (111±7 vs. 21±4 mg/day) were significantly ($p<0.05$) and adversely affected by salt overload; they were completely restored with both drugs.

Conclusions: These results demonstrate that dietary salt excess adversely affects renal function, hemodynamics, and structure. Angiotensin receptor blockade did not affect arterial pressure but prevented other adverse effects of salt overload, indicating that renal damage was not dependent on arterial pressure but, more likely, on another mechanism involving RAS. This is further supported by the findings that two different ARBs exerted similar effects.

R35 VANCOMYCIN-RESISTANT ENTEROCOCCAL BACTEREMIA: IS DAPTOMYCIN AS EFFECTIVE AS LINEZOLID?

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R36 THE DETECTION OF SYNERGY BETWEEN MEROPENEM AND POLYMYXIN B AGAINST MER-RESISTANT *ACINETOBACTER BAUMANNII* USING ETEST AND TIME-KILL ASSAY

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Background: The incidence of multidrug-resistant *Acinetobacter baumannii* infections is increasing. **A**ntimicrobial synergy might be useful, but no standardized method for in-vitro synergy testing exists. We elected to compare two methods.

Objectives: We sought to find any in-vitro synergy between meropenem (MER) and polymyxin B (PB) against MER-resistant *A baumannii*.

Methods: Eight genetically unique, MER-resistant (Etest minimum inhibitory concentrations (MICs): 24–32 μg/mL) *A baumannii* isolates from the United States were collected during the 2005–2006 period. All isolates were resistant to beta-lactams and fluoroquinolones but susceptible to PB (Etest MICs: 0.5 μg/mL). Synergy testing, using a concentration equal to the MIC, was performed in duplicate by standard time-kill assay (TKA) at 0 and 24 hours (synergy: ≥2 $\log_{10}$ decrease in colony-forming unit/mL after 24 hours by the combination compared to the most active single agent) and in triplicate by Etest (synergy: summation fractional inhibitory concentration ≤0.5). TKA was also performed using one-fourth and one-half the MIC of PB in combination with MER.

Results: TKA showed synergy (100%) with all combinations of PB and MER for all 8 isolates. The Etest method showed synergy in 63% (5/8) of the isolates. Two of the three isolates not showing synergy by Etest had a MER MIC >32 μg/ml. The concentration on the Etest strip may limit the use of the Etest synergy method to isolates with an MIC not exceeding the strip concentration. No antagonism was found.

Conclusions: In-vitro synergy may or may not translate into in-vivo benefits, but if so, a lower dose of PB combined with MER might prove both efficacious and less toxic.

R37 ENGAGING HEALTHCARE WORKERS TO IMPROVE HAND HYGIENE COMPLIANCE

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Objectives: The purpose of this study was to demonstrate what happens when staff are engaged to improve hand hygiene compliance.

Methods: Infection Control professionals conducted observational studies to monitor compliance to the Centers for Disease Control and Prevention healthcare worker (HCW) hand hygiene practice recommendations. Campaigns were used to promote compliance including "I Want You To Wash Your Hands," "Show Your Love. Wash Your Hands!," and "Physicians Take the Lead." In addition, feedback was given upon the observance of good and bad practices. Monthly reports were also given at medical and nursing staff meetings.

Results: A total of 2,215 opportunities for hand hygiene were observed from January 2006 through February 2008. Compliance was seen in 1,343 (61%) of the opportunities. The cumulative compliance rates at the end of 2006 and 2007 were 54% and 63%, respectively. This is a 9% year-over-year increase. The percentages of compliance for January and February 2008 were 76% and 84%, respectively.

Clinical Applications: Our studies show that the promotions and staff observations have engaged HCWs. Staff cheer when rates are above target and are disappointed when below. Compliance rates continue to rise. By the end of February 2008, a 26% increase, compared to the 54% cumulative rate of 2006, was observed. The target in 2006 and 2007 was 70%. The target was changed in 2008 to 75%. It is possible that the efforts of the Infection Control team have engaged staff to improve. Educational tools, such as presentations, button and signage campaigns, observational studies, and target increases will continue.

R38 GETTING UP TO STANDARD: GIVING THE APPROPRIATE ANTIBIOTIC IN THE APPROPRIATE TIME

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Background: According to the Institute for Healthcare Improvement (IHI) Surgical Care Improvement Project (SCIP) report, 30 million inpatient surgeries are performed every year in the United States. A significant percent result in preventable, often life-threatening complications. Studies show that proper antibiotic selection and timing, SCIP measures, will reduce complications related to an infection.

Methods: Physician champions from Anesthesiology took ownership of the antibiotic appropriateness indicator. Processes were changed, including redesigning the anesthesia record so to prompt documentation. Surgeons collaborated with the Infectious Diseases pharmacist to update recommendations for surgical prophylaxis. Surgery-based physicians were educated on the changes. SCIP data were reported to surgery staff at Surgery Performance Improvement committee and Surgery Council meetings and to various medical and nursing leaders through the Performance Improvement committee. The changes were made during a period that would affect 2007 data, and primarily baseline data were collected in 2006.

Results: Data collection for antibiotic timing began in 1Q 2006. Incremental improvements have been observed. The quarterly preoperative antibiotic timing compliance rates were 40%, 44%, 39%, 60%, 66%, 68%, and 63% from 1Q 2006–3Q 2007, respectively. Antibiotic discontinuation rates were 66%, 56%, 47%, 56%, 69%, 66%, and 68% from 1Q 2006–3Q 2007, respectively. Data on antibiotic selection were reliably collected starting in 1Q 2007. The compliance rates for antibiotic selection were 89%, 93%, and 89% for 1Q 2007–3Q 2007, respectively.

Conclusions: Antibiotic timing and selection are important SCIP indicators that improve perioperative morbidity and mortality. Reaching a target 90% or better compliance rate requires a collaborative effort among perioperative physicians, nurses, and pharmacists. Anesthesiologists serving as champions for the process may help increase compliance.

R39 REDUCING SURGICAL SITE INFECTIONS

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Background: According to the Institute for Healthcare Improvement (IHI) Surgical Care Improvement Project (SCIP) report, 30 million inpatient surgeries are performed in the United States every year; a significant percentage result in preventable, often life-threatening complications. Meeting certain criteria of care makes surgical site infections less likely.

Methods: Beginning in 2007, a major organizational initiative was developed with a target of reducing Class 1 surgical site infections toward zero. Processes were changed, including the use of clippers instead of razors, the use of a chlorhexidine-based skin preparation, and improved environmental cleaning. In addition, surgeons were engaged in dialogue with Infection Control and Performance Improvement staff to meet the SCIP indicators: appropriate use of antibiotics, appropriate hair removal, postoperative glucose control for major cardiac surgery patients, and immediate postoperative normothermia for colorectal surgery patients.

Results: Data collection on postoperative surgical site infections for Class 1 procedures was performed in 2007. At the year's end, 59 surgical site infections were reported. During the first half of the year, 18 infections were reported during the first quarter and 16 infections during the second quarter. During the latter half of the year, a reduction in surgical site infections was observed: 10 infections during the third quarter and 12 during the fourth quarter.

Conclusions: Our studies show that changes made around the care of surgery patients may have contributed to the reduction in surgical site infections.

R40 THE USE OF AN IN-VIVO IMAGING SYSTEM TO IDENTIFY AND QUANTIFY TRANSGENIC MICE

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Background: Angiotensin II is a biologically active peptide that can act as a circulating hormone and that mediates hemodynamic and electrolyte effects in the renin-angiotensin system. We have generated mice transgenic for encoding fluorescent fusion proteins of angiotensin II (ECFP/AII) fused downstream to evaluate the effects of intracellular angiotensin II.

Objectives: The objective of this study was to determine the genotype and zygosity of potential ECFP/AII transgenic mice using the IVIS™ Imaging System (Caliper Life Sciences, Hopkinton, Mass.).

Results: Potential transgenic mice were screened using the IVIS™ Imaging System with the green fluorescent protein filter. Images acquired were analyzed with the Living Image software, which quantifies the bioluminescence signal created. Images with increased total count light intensity (photons/sec) compared to C57BL/6 wild-type mice (background into which the transgene was bred) indicated the presence of the ECFP/AII gene in mice. Hemizygous mice showed significantly greater fluorescence (mean of 4.48E+05) compared to wild-type mice ($p<0.05$). These results were further confirmed by polymerase chain reaction tests and Southern blot analyses using a transgene-specific probe.

Conclusions: We have shown that mice possessing the ECFP/AII transgene fluoresce with a greater intensity then wild-type mice, allowing the presence of the transgene to be determined using the IVIS™ instrument. Furthermore, this instrument may be useful for differentiating high from low copy number mice for a given transgene.

R41 THE ROLE OF GABARAP IN ANGIOTENSIN AT1 RECEPTOR TRAFFICKING TO THE PLASMA MEMBRANE

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Background: The renin-angiotensin system (RAS) is a common target of antihypertensive drugs. Toward an ultimate goal of developing novel therapeutics for hypertension, our laboratory has initiated studies to identify proteins that interact with the angiotensin type-1 receptor (AT_1R), a critical component of RAS. In a yeast two hybrid screen, we have recently identified the gamma-aminobutyric acid ($GABA_a$) receptor-associated protein (GABARAP) as one such protein.

Objectives: The objectives of the current study are to characterize the interaction between AT_1R and GABARAP at the molecular level and to explore the functional consequences of this interaction.

Results: Glutathione S-transferase **(**GST) pulldown and coimmunoprecipitation assays were used to confirm direct interaction between AT_1R and GABARAP and to demonstrate that such interaction occurs in mammalian cells, respectively. The deletion and site-directed mutagenesis of AT_1R localized the GABARAP interaction domain to amino acid residues 306–315 and identified Tyr^{312} as essential for interaction in yeast. Conversely, deletion mutagenesis indicated that sequences within the N-terminal and C-terminal regions of GABARAP are required for interaction with AT_1R. Normally, the terminal residue of GABARAP is cleaved shortly after synthesis. Mutation of the conserved penultimate residue, Gly^{116}, to alanine prevented processing of GABARAP. Cell surface expression of an AT_1R-fluorescent protein fusion in PC12 pheochromocytoma cells was enhanced by coexpression of wild-type GABARAP but not by the GABARAP (G116A) mutant.

Conclusions: Identifying the GABARAP binding domain of AT_1R will permit the synthesis of peptides that function as decoy inhibitors of GABARAP. Such inhibition should lead to reduced cell surface expression of AT_1R. Thus, in principle, these peptide inhibitors should function as antihypertensive drugs.

R42 THE USE OF VIDEO SURVEILLANCE IN FALL REDUCTION

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Background: The Joint Commission on Accreditation of Healthcare Organizations reported that 5.6% of all sentinel events (2007) were fall related. According to a study using the National Database of Nursing Quality Indicators, higher fall rates were associated with fewer nursing hours per patient day. According to Dunton et al., fall rates were highest on medical units, with a significant negative linear relationship between fall rates and nursing hours ($p<0.05$).

Objectives: The purpose of the interdisciplinary project was to reduce falls on a fast-paced 34-bed acute care telemetry unit. The goal was to develop a creative fall reduction plan that would be cost effective, allow 24/7 visual observation, and improve the overall fall rate.

Methods: The project was conducted from January 2006 through December 2006. The plan design included using four patient rooms equipped with cameras to facilitate 24/7 video surveillance by a sitter. The responsibilities of the monitor were first to stop any active fall and second to alert the nurse to any increased restlessness. A cost analysis of the project was performed, and guidelines were developed.

Results: The primary endpoint of this project was to reduce falls; therefore, the number of falls/1,000 patient days was identified as the metric to track the project's outcome. A 6% reduction in the mean annual unit fall rate was identified following project implementation; however, this difference was not significant ($p>0.05$). But, only 1 fall (0.68 falls/1,000 patient days) occurred in the 417 patients admitted to the camera rooms over the 12-month evaluation period.

Conclusions: This Performance Improvement Project suggests that video surveillance may be an acceptable strategy in reducing falls in hospitalized patients.

R43 HURRICANE KATRINA: COULD YOUR FACILITY WEATHER THE STORM?

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Objectives: After surviving the nation's worst natural disaster, Hurricane Katrina, medical professionals in the New Orleans region will never forget August 29, 2005. Sharing the trials and tribulations of disaster management with other healthcare providers is imperative. This management project evaluated the response of a 500-bed academic medical center with 26 clinics and 2 outlying hospitals to Hurricane Katrina, to enhance future disaster preparedness. In this evaluation we included all of the employees and systems in place during the hurricane and for 2 weeks afterward.

Methods: Post-storm, as one of the only viable healthcare organizations in the area, the administration collaborated with other healthcare administrators as well as with local, state, and federal officials to evaluate what worked and what improvements would be needed before another such disaster.

Results: The evaluation focused its findings on what healthcare organizations should be doing before and during a disaster on the following areas. In terms of planning, organizations should develop an internal plan to ensure the ability to sustain the vital necessities of life for 2 weeks without outside support. In addition, coordination with local, state, and federal agencies is imperative. Regarding power and utilities, adequate emergency power supplies should be ensured and the location of generators known. Having well water ensures potable water and plumbing. To communicate, various forms of radar and/or satellite communication devices with text messaging should be available to coordinate with local, state, and federal authorities. Organizations may need National Guard assistance to aid security staff at the facility. Martial law may be invoked; lawlessness may break out. A centralized process for registering and tracking all employees, visitors, and families is necessary. Organizations should also set curfews. They must also prioritize the order of patient evacuation for infants, children, and mothers and consider transportation needs for the evacuation of patients and staff. The evacuation plan must allow for vertical movement without power, such as baskets to lower patients down elevator shafts or specialty chairs to maneuver stairs. They must be prepared to track and document the mass number of patients during an evacuation, including sending medical records. Regarding housing, organizations must be prepared to provide sleeping accommodations for staff and family members and should consider a centralized "housing office" to track where everyone sleeps. Also important is spiritual and social support: Providing meaningful, accessible spiritual and social support for caregivers, employees, patients, and families is key, and pastoral care and social work staff should be considered essential staff.

Conclusions: Administrators should ensure a functional disaster management plan with regular updates. Strong leadership at all levels is imperative to remain focused and calm during a crisis.

R44 PSEUDOXANTHOMA ELASTICUM: A COMPARATIVE STUDY IN THE PHENOTYPIC EXPRESSION OF OCULAR FINDINGS IN A FAMILY OF PATIENTS OF DIFFERING GENOTYPES

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Objectives: This study was designed to determine whether a correlation between ABCC6 mutations and ocular phenotypic expressions could be made.

Methods: A total of 28 relatives (22 female, 6 male) of a proband with known pseudoxanthoma elasticum (PXE) were recruited for an evaluation of ocular manifestations of the disease, including Peau d'Orange appearance (PDO), angioid streaks (AS), choroidal neovascular membranes (CNVM), peri-papillary atrophy, and drusen. The study was observational and prospective and was conducted in conjunction with the Department of Endocrinology at the Ochsner Clinic Foundation (study title: ''PXE Genetic and Phenotypic Study in a Large Cajun Pedigree'') that enrolled 42 patients and evaluated the association of two well-known ABCC6 mutations (R39G, R1138W) related to decreased bone density losses in PXE. Comprehensive eye examinations—including best corrected visual acuity, a fundus exam, and improved visual acuity—were documented for all patients. Blood samples were sent to the Molecular Diagnostics Laboratory from the Department of Dermatology and Cutaneous Biology at the Thomas Jefferson University to evaluate the presence of known mutations in the aforementioned gene.

Results: Statistically significant correlations between PDO ($p=0.0016$), AS ($p=0.0001$), and CNVM ($p=0.0016$) were noted.

Conclusions: A statistically significant association between the R39G mutation of the ABCC6 gene and 3 of the 6 known manifestations of PXE was documented. The role of this gene is unknown in its association with AS and, ultimately, CNVM. The question may be raised whether there is any association between age-related macular degeneration (ARMD), the development of a diseased Bruch's membrane, and subsequent wet-form ARMD, for which patients could possibly be screened.

R45 SUMMER STARS SHINE BRIGHTLY AT OCHSNER

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Background: Despite increased attention and funding, secondary science education in the United States is woefully inadequate; approximately 70–80% of students do not perform at the proficient level according to national assessment tests. Reform in science education will require the active participation of scientists, other professionals, and relevant community organizations.

Objectives: The goals of this study were to develop and evaluate a summer, science-centered learning program at Ochsner Medical Center. The Science, Technology, Academics, and Research (STAR) program was created to stimulate the interest of local students—particularly underrepresented minorities—in biomedical science and healthcare, with the ultimate goal of expanding the pipeline to careers in these fields.

Methods: Students were selected primarily based on recommendations by science teachers and guidance counselors from New Orleans Science and Math High School (NOSMHS) and Patrick F. Taylor Science and Technology Academy (PFTSTA). A comprehensive curriculum consisting of lectures, workshops, and laboratory rotations was developed and grouped into 6 different categories: Science & Research, Healthcare Careers, Knowledge Acquisition & Management, Clinical Rotations, Regulatory Issues, and Professional & Leadership Development. Each program component was subjected to a postactivity student evaluation and analysis.

Results: A total of 11 students were selected: 5 from NOSMHS and 6 from PFTSTA. This group was comprised of 7 African-Americans (64%), 1 Caucasian/Non-Hispanic (9%), and 3 Asians (27%). The students gave Healthcare Careers and Science & Research the highest ratings for both the value and the quality of content. All categories except Clinical Rotations and Regulatory Issues received a highly favorable rating (≥ 9.0 on a scale of 10) for both measurements. Although the program was designed with rigor and challenge in mind, the students expressed a desire for increased content. Finally, all categories elicited a favorable response (≥ 0.5 on a scale of 1) for Ochsner as a prospective employer.

Conclusions: The positive reception of the STAR program suggests that it fills an important need in the local education community. Although preliminary, these initial evaluations suggest that over time the STAR program will have a positive influence in students' appreciation for science in general and in their consideration of biomedical research and education or healthcare as career paths.

R46 HOW OFTEN DO ADULTS WITH CONGENITAL HEART DISEASE NEED HOLTER MONITORING?

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Background: Adults with congenital heart disease (ACHD) are a growing population with a risk of developing arrhythmias. The purpose of this study is to assess the incidence of abnormal electrocardiograms (ECGs) and 24-hour Holter monitors in ACHD patients.

Methods: This study is a retrospective review of encounters with ACHD patients from July 2004 to December 2006. Data collected included diagnosis details, ECGs, and Holter monitor results. Inclusion criteria were age >18 years, a 24-hour Holter monitor test, and an ECG performed. All ECG and Holter results were interpreted by a single pediatric electrophysiologist blinded to the diagnoses.

Results: We identified 271 patients who made 379 clinic visits during the target period. Of these, 76 patients met inclusion criteria, having both an ECG and a 24-hour Holter monitor test obtained during a clinic visit. Diagnoses included all varieties of CHD. Analyses of all ECGs revealed 51 normal and 25 abnormal (33%). ECG abnormalities consisted of ectopy (14%), abnormal T waves (13%), sinus tachycardia abnormalities (4%), prolonged QT (4%), intra-atrial reentry tachycardia (3%), supraventricular tachycardia (SVT) (3%), inappropriate sensing and/or pacing (1%), and couplets (1%). Analyses of the patients' Holter monitors revealed 35 normal (46%) and 41 abnormal (54%). The most common abnormalities were ectopy (45%), couplets (4%), SVT (4%), ventricular tachycardia (3%), and inappropriate sensing and/or pacing (4%). Of the patients with normal ECGs, 41% had abnormal Holter monitors. Of the patients with abnormal ECGs, 80% had abnormal Holter monitors. Of the 23 patients who had multiple Holter monitors, 14 (61%) had changes in Holter monitoring on subsequent visits.

Conclusions: Arrhythmias detected on ECGs or Holter monitors are present in the majority of our ACHD patients. Of patients with a normal ECG, we identified 41% with abnormal Holter monitoring. We recommend that annual ECG and Holter monitoring be performed in ACHD patients to detect rhythm abnormalities. Further studies are needed to assess optimal monitoring of these patients.

R47 IMPLANTATION OF TRANSVENOUS LEADS AFTER TRANSVENOUS CLOSURE OF INTRACARDIAC SEPTAL DEFECTS

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Background: Transvenous lead implantation in patients with a septal defect may result in complications such as clot formation, stroke, and lead misplacement. For this reason, electrophysiologists often opt for either epicardial lead implantation or chronic anticoagulation therapy in conjunction with transvenous leads. With the advent of transvenous septal occlusion devices, these risks may be avoided. To date, no data exist concerning the safety and efficacy of implanting transvenous atrial and/or ventricular leads in patients who have previously undergone a device closure of a septal defect. The purpose of this study is to evaluate the outcomes of both the closure device and the transvenous leads at their initial implant (device and leads) as well as their long-term follow-up.

Methods: This study is an Institutional Review Board-approved multi-center retrospective review of all patients referred for transvenous lead implants with transvenous septal occlusion devices implanted. Data collected include demographics, age, the cardiac diagnosis, the indication for septal closure, initial and long-term follow-up of the closure device, the indication for transvenous lead implantation, and the initial and long-term follow-up of the lead thresholds.

Results: We identified 8 patients who had undergone transvenous septal occlusion and then implantation of a transvenous lead. Cardiac diagnoses included complex cardiac anatomy in 5; all had previous surgical repairs. Three had atrial septal defects or patent foramen ovale. Nine transvenous septal occluders (8 atrial, 1 ventricular) were placed, with 1 patient receiving 1 of each. The average age at the time of occlusion was 13 years (range: 9–18 years). No complications occurred during device implantation or long-term follow-up (average: 46 months; range: 5–90 months). Transvenous leads were implanted during the same hospital stay in 5 patients and either 3 (2) or 8 (2) months later. Indications for device implantation [pacers (5) and implantable cardioverter-defibrillators (ICDs) (3)] were complete atrio-ventricular blocks (3), sinus node dysfunctions (2), and aborted sudden death (3). No complications occurred during lead implantations or during long-term follow-up (mean of 44 months; range: 5–84 months). Lead thresholds were excellent at the time of implantation and during follow-up (averages were atrium: implant = 0.5 V at 0.4 ms, follow-up = 0.6 V at 0.4 ms; ventricle: implant = 0.6 V at 0.5 ms, follow-up = 0.9 V at 0.5 ms).

Conclusions: The implantation of transvenous pacing and ICD leads can be successfully performed after the implantation of transvenous septal occlusion devices. Transvenous leads can be implanted during the same hospital stay as for the septal occlusion. Acute and chronic lead thresholds did not change significantly. A multi-center study with long-term follow-up is warranted to evaluate lead and device longevity.

R48 ARE WE PROTECTING OUR RESIDENTS? RADIATION EXPOSURE CONCERNS AND LEAD APRON USE

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Objectives: Radiation exposure has been linked to an increased risk of cancer. We evaluated typical practices regarding radiation protection with lead aprons in radiology residencies to determine whether improvements could be made.

Methods: An electronic survey was created addressing lead apron availability and use by radiology residents. This survey was sent to all radiology program coordinators in the country for distribution to residents. Questions asked included: Does your program provide each resident with lead free of charge? Are residents instructed in choosing properly fitted lead? Does lead for female residents have smaller arm holes to protect axillary breast tissue?

Results: A total of 606 residents responded: 67% male, 33% female. Of respondents, 93% considered radiation exposure an important personal safety issue; 23% reported that their program provides each resident with his or her own lead free of charge. Of the remaining 77%, only 21% reported that they were instructed in choosing lead that fits properly, 81% had a variety of sizes of lead available for use, and 69% said that the lead provided for females did not have smaller arm holes to protect axillary breast tissue.

Conclusions: Despite the fact that an overwhelming majority of residents think that radiation exposure is an important personal safety issue, most are not instructed about choosing lead that fits appropriately. Specifically, females do not use lead with smaller arm holes to protect axillary breast tissue. Addressing the issue of properly fitting lead could improve resident radiation safety.

R49 LIVER TRANSPLANTATION IN THE SUPER MORBIDLY OBESE: A SINGLE CENTER EXPERIENCE

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Background: Morbid obesity is considered a relative contraindication to liver transplantation at many transplant centers.

Results: Between June 1, 2005, and December 31, 2007, 193 adult patients underwent primary liver or combined liver/kidney transplants at our facility. Of those, 22 had a BMI of ≥40 (range 40 to 56, mean: 46.1) and 171 had a BMI of <40 (range 16 to 39, mean: 28.0). The median recipient age was 51 ± 8.3 years in the super obese group (BMI ≥ 40) and 54 ± 9.4 years in the control group (BMI < 40). Pre-transplant diagnoses in the super obese patients were chronic active viral hepatitis C (50%), nonalcoholic steatohepatitis (22%), Laennec's cirrhosis (18%), hemochromatosis (5%), and autoimmune disease (5%). The Model for End-State Liver Disease scores ranged from 15 to 34 in the super obese group (mean: 23 ± 4.9) and from 6 to 40 in the control group (mean: 22 ± 7.3). The length of stay trended longer in the obese group, with the super obese patients staying a mean of 15 ± 15.3 days and the control group staying a mean of 14 ± 24.3 days. The 30-day reoperation rates were similar for the two groups, with 18% of the super obese patients returning to the operating room compared to 20% of the control group. All of the super obese patients survived 30 days, and 10 of the 22 have had a follow-up of more than 1 year (mean follow-up: 11.2 ± 8.5 months). The 30-day and 1-year Kaplan-Meier patient survival rates were 100% and 90%, respectively, for the super obese group. Both deaths in the super obese group occurred at 2.5 months post-transplant (sepsis in one, acute cardiac event in the other). For the control group (mean follow-up: 15.1 ± 9.2 months), 30-patient survival was 99.4% and 1-year Kaplan-Meier patient survival was 96.6%.

Conclusions: In conclusion, transplantation of the super obese, while technically challenging, yields very good short-term results. Longer follow-up is needed.

R50 THE EFFECT OF THE TISSUE INHIBITOR OF METALLOPROTEINASE-3 ON TNF-A LEVELS IN RATS UNDERGOING SUBLETHAL TOTAL HEPATIC ISCHEMIA

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Background: We previously reported that the tissue inhibitor of metalloproteinase-3 (TIMP-3), a specific inhibitor of Tumor Necrosis Factor-alpha (TNF-α) converting enzyme (TACE), significantly decreases circulating levels of TNF-α and ameliorates biochemical and histological hepatic injury in a partial warm ischemia model. In this study, we tested the ability of TIMP-3 to lessen liver injury in a sublethal total hepatic ischemia model.

Methods: Male Wistar rats (n=18) were intraperitoneally injected with TIMP-3 at a dosage of 0 (normal saline, control group) or 1,000 ng/Kg body weight. One hour later, all animals were subjected to 30 minutes of total warm hepatic ischemia followed by reperfusion for 24 hours, 48 hours, or 7 days. Serial serum TNF-α levels were measured by enzyme-linked immunoassay. Serum alanine aminotransferase (ALT) levels and hepatic histology were examined.

Results: All animals survived sublethal hepatic ischemia for the duration of the study. The serum TNF-α levels of TIMP-3-treated animals were significantly lower at 24 hours, 48 hours, and 7 days compared to the controls ($P < 0.01$). The serum ALT levels were significantly reduced in the TIMP-3-treated group at 24 and 48 hours ($P < 0.01$) and were not different by day 7.

Conclusions: TIMP-3 treatment resulted in lower circulating TNF-α levels for at least 7 days following sublethal ischemic hepatic injury. Circulating hepatic transaminases were also reduced with TIMP-3 treatment for the first 48 hours after injury. This model suggests that TIMP-3 may potentially play a clinically relevant role in protecting livers undergoing ischemic insult.

R51 COMPARISON BETWEEN AUTOLOGOUS DERMAL GRAFTS AND NON-AUTOLOGOUS GRAFTS IN THE SURGICAL MANAGEMENT OF PEYRONIE'S DISEASE: LONG TERM FOLLOW UP

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Background: Peyronie's disease is a fibrotic disorder of unclear pathophysiology. A method of surgical treatment is plaque excision with grafting of the defect. Several grafting materials are available, including autologous dermal grafts and nonautologous materials.

Objectives: We sought to compare surgical results using autologous dermal grafts with those using nonautologous grafts in the surgical correction of acquired penile curvature due to Peyronie's disease.

Methods: From 2002–2006, 21 patients with penile curvatures underwent an excision of plaque with either autologous dermal grafts (N=9) or nonautologous [small intestinal submucosa (SIS) or Tutoplast] grafts (N=12). The preoperative work-ups included photo documentation of penile injection-induced erections to document the deformities. All patients underwent plaque excision followed by the placement of a graft within the defect. Follow-up consisted of chart reviews, serial photographic assessments, questionnaires, and telephone interviews. The questionnaire data consisted of the Patient Global Impression of Improvement (PGII). Here failure is defined as the recurrence of curvature >45° or a PGII score of ≥4.

Results: The mean age of patients was 56.8 years (range: 46–70 years). The mean penile curvature was 78° (range: 45–90°) for the dermal graft group and 60° (range: 45–90°) for the nonautologous group. The mean follow-up for dermal grafts was 34.4 months (range: 13–66 months) and for nonautologous grafts was 11.3 months (range: 2.5–18 months). Postoperative complications included transient numbness or hyperesthesia of the glans penis in 20%. No postoperative hematomas were seen. The success rate was 78% in the dermal graft group and 36.4% in the nonautologous graft group ($p>0.09$). Operative times were shorter with autologous grafts than with nonautologous grafts (162.1 minutes vs. 187.1 minutes, respectively). This was not significant ($p>0.05$). No significant difference between dermal grafts and nonautologous grafts was found with respect to PGII scores.

Conclusions: In our series of dermal grafts and nonautologous grafts, patients who underwent nonautologous grafting appeared to have comparable results to those who underwent dermal grafting. There was a difference in success rates between the two groups, but this difference was not of statistical significance.

R52 THE REIMBURSEMENT OF LONG-TERM POSTPLACEMENT COSTS AFTER ENDOVASCULAR ABDOMINAL AORTIC ANEURYSM REPAIR

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R53 A LONG-TERM POSTPLACEMENT COST COMPARISON OF ANEURX AND ZENITH ENDOGRAFTS

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C1 AIR IN THE ESOPHAGUS THAT LED TO SEVERE BRONCHIAL COMPRESSION

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Introduction: The difficult airway algorithm depends on the ability to successfully mask ventilate the patient. This technique allows for the artificial ventilation of a patient in preparation for establishing an endotracheal airway. However, mask ventilation has been associated with nausea, vomiting, an increased risk of aspiration, future difficult ventilation, the perforation of gastric and duodenal ulcers, and bradycardia from vagal nerve stimulation. Mask ventilation is required after the induction of general anesthesia.

Case Report: A patient presented with an unknown difficult airway. After three unsuccessful intubation attempts using direct laryngoscopy, a flexible bronchoscope was needed to intubate the trachea. The patient was mask ventilated for approximately 20 minutes to sustain oxygenation. After a successful intubation, the fiber-optic scope was placed through the endotracheal tube and revealed a left main stem bronchial compression. After a diagnostic work-up was completed, it was determined that the compression was caused by a massive amount of air in the esophagus. This is a previously unreported and unusual side effect of mask ventilation.

C2 FLUID RESUSCITATION: MORE IS BETTER

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Introduction: Systemic inflammatory response syndrome is associated with major intravascular volume depletion and impaired oxygen delivery, leading to systemic tissue hypoxia and irreversible end organ damage. Despite current treatment approaches discussed in the literature, morbidity and mortality in severe sepsis remain high. Could outcomes be improved by preserving intravascular fluid volume with more aggressive fluid resuscitation than reported in the literature?

Case Report: A 38-year-old woman presented with severe menorrhagia and symptomatic anemia, requiring a dilatation-and-curettage hysteroscopy. Immediately after the operation, she experienced respiratory distress with severe hypoxemia and acute renal insufficiency. Management centered on fluid hydration, with serial echocardiograms confirming the adequacy of resuscitation. Low-dose, short-term vasopressin was needed to support vasomotor tone, empiric broad-spectrum antibiotics were started, and a modified acute respiratory distress syndrome protocol (ARDSnet) was used for ventilator support. The patient was extubated on postoperative day 13 and discharged on postoperative day 17.

Discussion: While the literature has confirmed the benefits of early fluid resuscitation, no studies have investigated the effects of additional therapy on morbidity and mortality in septic patients. This case is representative of the need for investigational studies that could determine whether a more aggressive fluid resuscitation approach would improve outcomes in septic patients.

C3 THE ESTABLISHMENT OF AN OBSTETRIC HEMORRHAGE MULTIDISCIPLINARY TEAM

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Introduction: As the incidence of Cesarean deliveries rises, so will cases of placenta percreta. Placenta percreta is associated with a maternal mortality rate as high as 9.5% and a perinatal mortality rate of 24%. The use of a multidisciplinary team is required to decrease the incidence of mortality and morbidity in women having a placenta percreta. In our practice we have developed an obstetric hemorrhage team of physicians from eight different specialties, who assist with the prompt recognition and management of these types of cases.

Case Report: A 32-year-old woman arrived at an area hospital with hematuria at 32 weeks gestational age. A magnetic resonance imaging scan was performed, which showed placental invasion through the uterus and into the bladder. The patient was then transferred to our facility, and the multidisciplinary team was alerted. The anesthesiologist, having to interact directly with each specialist, kept everyone informed of the care plan. Other specialists included a maternal fetal medicine specialist, a gynecological oncologist, a urologist, a neonatologist, an interventional radiologist, a vascular surgeon, and a blood bank physician.

Discussion: Obstetric hemorrhage due to placenta accreta, and specifically placenta percreta, has been associated with high mortality. The key to a successful outcome in this case was the multidisciplinary approach we adopted, appropriate communication, and early planning. At our institution, an obstetric hemorrhage team has been developed, which consists of a maternal fetal medicine specialist, a gynecological oncologist, an anesthesiologist, and a neonatologist. If deemed necessary after a case is reviewed, the rest of the team—an interventional radiologist, a urologist, a vascular surgeon, and a blood bank physician—are contacted. This team approach has been used several times since the case reported here with great success.

C4 RADIATION INDUCED PERITONEAL MESOTHELIOMA: A REVIEW OF THE NATIONAL CANCER INSTITUTE SURVEILLANCE, EPIDEMIOLOGY, AND END RESULTS DATABASE

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C5 FATAL PNEUMONIA DUE TO INHALATION EXPOSURE OF *BACILLUS CEREUS* CONTAINING *BACILLUS ANTHRACIS* TOXIN GENES

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C6 HOW NATURAL DISASTERS CHANGE NATURAL PATTERNS: COCCIDIOIDOMYCOSIS IN NEW ORLEANS!

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C7 LAZARUS, THE KIDNEY TRANSPLANTEE

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Introduction: Leprosy has been eliminated from most of the developed world since the introduction of multi-drug therapy. It is rarely reported in North America but may take advantage of immunosuppressed hosts.

Case Report: A 49-year-old male received a cadaveric kidney transplant in February 1999 for kidney failure due to antineutrophil cytoplasmic antibodies (ANCA)-associated vasculitis. His human leukocyte antigens (HLA) were comprised of A2, A3, B7 (BW6), B51 (BW4), CW4, CW7, DR8, DR15, DQB1*04, DQB1*06. He had an uneventful posttransplant course on cyclosporin, mycophenolate mofetil, and prednisone but was lost to follow-up after Hurricane Katrina. In April 2006, he returned, reporting a 1-year history of progressive skin eruptions of the chest, back, and arms without associated symptoms. A physical examination showed a variety of skin lesions, including many pink to red oval-shaped macules and papules on the back, chest, buttocks, and arms, some of which appeared inflamed. The face was spared. The lesions were pruritic but not tender, and he had normal sensation over the lesions. A series of biopsies were performed. A Fite's stain showed numerous acid fast organisms within granulomatous inflammations, and the patient was diagnosed with lepromatous leprosy (LL). The source of the infection could not be established. The patient was treated with dapsone, clofazimine, and rifampin. A repeat biopsy 1 year later showed evidence of persistent bacteria, and 24 months of therapy was recommended secondary to chronic immunosuppression.

Discussion: Leprosy is caused by *Mycobacterium leprae*, an acid-fast obligate intracellular bacillus, and is characterized by chronic granulomatous disease of the skin and peripheral nerves. It is probably transmitted through respiratory droplets from close contacts, though armadillos may act as a reservoir. Disease expression has been linked to HLA-DR3 and HLA-DQ1. Few cases of leprosy in renal transplant patients have been reported, including six in India, one in Taiwan, and one in the United States. Skin lesions in transplant patients pose a formidable clinical challenge. The differential diagnoses include fungal, bacterial, or other atypical mycobacterial infections. Leprosy should be considered in this differential, and a biopsy is warranted in such cases.

C8 THE SKINNY ON A GROWING PROBLEM: DRY BERIBERI FOLLOWING BARIATRIC SURGERY

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Introduction: Obesity has reached epidemic levels in the United States, with more than 60% of the adult population meeting the criteria for being overweight or obese. Gastric bypass surgery is an effective treatment, and more than 100,000 procedures are performed annually. Surgery is not benign and has multiple inherent risks, including malnutrition and vitamin deficiency.

Case Report: A 37-year-old morbidly obese female underwent an uncomplicated Rouxen-Y procedure 3 months prior to presentation. She received no follow-up care. Two weeks prior to presentation the patient developed mild paresthesia of the anterior right leg. Two days prior to presentation her paresthesias began to involve the left leg with progressive weakness of the lower extremities. One day prior to presentation she experienced acute problems walking, fell down, and was unable to stand. She also had vomiting and a 60-pound weight loss. On admission, bilateral lower extremity proximal muscle weakness was noted from the thighs distally. Sensations in the lower extremities bilaterally from the knees distally were decreased, and reflexes were diminished. There were no upper extremity abnormalities, and cranial nerves were intact. There were no signs of cardiac disease. A computed tomography scan of the head and a magnetic resonance imaging scan of the brain and spinal cord were normal. A complete blood count, a comprehensive metabolic panel, an erythrocyte sedimentation rate test, and a C-reactive protein test were all normal. Vitamin levels revealed greatly reduced thiamine levels (<0.5), but vitamin B12 and others were normal. Aggressive thiamine replacement was begun. After three weeks of physical therapy, she was able to ambulate 150 feet with a walker.

Discussion: Common after gastric bypass surgery, thiamine deficiency is rarely symptomatic. Symptomatic thiamine deficiency—known as dry beriberi (neurological symptoms) and wet beriberi (cardiac symptoms)—is seen in 0.0002–0.4% of gastric bypass patients. Physicians should be diligent in vitamin replacement in post-gastric surgery patients. If beriberi develops, aggressive treatment with thiamine should begin quickly. Symptoms of dry beriberi may persist for weeks to months, but wet beriberi typically responds quickly.

C9 A.W.O.L. FLETCHER

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Case Report: A 69-year-old female initially presented to her primary care physician with a 3-month history of right shoulder pain with an impaired range of motion. She had no history of specific trauma and was found to have a diagnosis of torn supraspinatus tendon and failing non-operating treatment. During the work-up for surgical clearance, she was found to have a prolonged partial thromboplastin time (PTT) of >150, with normal prothrombin times and international normalized ratios. The patient reported no past history of bleeding, and a physical exam was unremarkable. This led to an extensive hematological work-up that included a basic hematology, mixing studies, lupus anticoagulant levels, and von Willebrand factor levels, which were all within normal limits except the mixing studies, which showed a correction of markedly prolonged activated PTT (aPTT) by adding normal pool plasma. This suggested a factor-level deficiency although factors levels were within normal limits. A kallikrein-kinin system (i.e., contact factor study) was performed, which showed prekallikrein activity of less than 1% and a normal high-molecular-weight (HMW) kininogen activity, suggesting a prekallikrein deficiency, which was responsible for her prolonged aPTT. The patient was cleared for surgery, as patients with prekallikrein deficiencies have no risk for bleeding during surgery.

Discussion: Prekallikrein—also known as Fletcher factor—is a coagulation protein with a molecular weight of 100,000 Daltons, is involved in the early stages of pathway activation, and participates in coagulation, fibrinolysis, and the plasma kinin-generating system. In prekallikrein deficiency, the activation of factor XII and, therefore, the intrinsic pathway of coagulation, proceed slowly, resulting in prolongation of PTT. In the fibrinolytic system, plasminogen is activated by several activators, including kallikrein and factor XII. Plasma kallikrein produces kinin from HMW kininogen, which is involved in various inflammatory processes, uterine contractility during labor and delivery, and various pathological states. In addition to congenital deficiency, acquired prekallikrein deficiency has been reported in those with liver disease, septic shock, chronic renal failure, vitamin K deficiency, multiple traumas, disseminated intravascular coagulation, typhoid fever, deep-vein thrombosis, and phlebitis. Even though affected people usually have a markedly prolonged aPTT, they do not experience increased clinical bleeding even when stressed by surgery, suggesting that contact mechanisms of clotting have only a minor role in normal vivo hemostatic function. Prekallikrein may not be important for normal in vivo fibrinolysis, which may operate via tissue or vessel wall fibrinolytic activator release. Therefore, it predisposes these patients to increased arterial thrombosis. Severe prekallikrein deficiency in humans is not associated with any clinically significant impairment of hemostasis, fibrinolysis, or inflammatory response. In most cases it is a laboratory red flag, especially in preoperative testing of surgical patients, as was seen in our patient.

C10 PERITONEAL DIALYSIS CATHETER EXIT SITE INFECTION WITH NON-TUBERCULOUS MYCOBACTERIA

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Introduction: Exit site infections are common complications of peritoneal dialysis catheters and cause significant morbidity. However, *Mycobacteria smegmatis* is an organism that very rarely causes that infection. An organism first isolated in soil, it is not often thought of as a pathogen although it has been increasingly found in post-traumatic wound infections. Catheter-related infections with mycobacteria are rare.

Case Report: We report a case of *M smegmatis* infection of a peritoneal catheter exit site, which was treated with antibiotics and the removal of the catheter.

C11 OBSESSIVE-COMPULSIVE BEHAVIOR: NOT AN UNCOMMON DESTRUCTIVE SIDE EFFECT OF ANTI-PARKINSON DRUGS

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Introduction: Parkinson's disease (PD) is the second most common neurodegenerative disorder. Bradykinesia, bradyphrenia, and rigidity are associated with a 95% loss of dopaminergic neurons in the substantia nigra. The nonmotor features of PD are caused by a >50% loss of neurons in several other neurotransmitter systems. While powerful new drugs prolong the life span and improve the quality of life of PD patients, we are also encountering new and more destructive side effects.

Case Report: Several patients have demonstrated various types of obsessive-compulsive behavior with destructive financial, emotional, marital, and social consequences. Uncontrolled casino and Internet gambling and hypersexuality are the two most common abnormal impulse control behaviors noted. However, one patient was consumed by the need to repot the same plant several times during the day. Withdrawal of the drug the patient is taking reverses the side effects completely. The nigrostriatal dopaminergic input and the D1, D2, D3, D4 dopaminergic receptors in the basal ganglia reinforce the emotional, cognitive, and motor components of behaviors that are required to face acute challenges in day-to-day life. Excessive stimulation of the dopamine D3 receptor due to overly aggressive treatment of PD is responsible for these obsessive behaviors. Early recognition of these destructive side effects is critical for the maintenance of improved quality of life in the long term.

C12 PROFOUND AND PROGRESSIVE DEMENTIA IN A YOUNG WOMAN WITH A NONPATHOGENIC MUTATION OF THE PRESENILIN-1 GENE

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Introduction: Alzheimer's disease (AD) is the most common neurodegenerative disorder. The neuropathology of AD is characterized by an extraneuronal accumulation of beta-amyloid protein and intraneuronal neurofibrillary tangles. Our understanding of the pathogenesis of AD is greatly enhanced by the small number of sporadic and familial AD patients who have been identified with mutations of several genes. Among these, mutations of the presensilin-1 (PSEN-1) gene have been the most frequent and the most pathogenic.

Case Report: A 49-year-old retired accountant's first clinical problem was dyscalculia (problems with calculations). The patient then developed a full-blown clinical picture of AD within a span of 2 years. Laboratory investigations demonstrated an A318G point mutation in Exon 4 of the PSEN-1 gene in this patient. While this mutation is not a newly identified mutation, what is new is that this mutation is considered to be nonpathogenic. However, in our patient it was associated with profound and progressive dementia. The observation of our patient suggests that the A318G mutation in Exon 4 could be a risk factor in some forms of familial and/or sporadic AD. It may also be in linkage disequilibrium with a pathogenic change somewhere else in the PSEN-1 gene or in proximity to a yet unidentified pathogenic mutation of the PSEN-1 gene.

C13 LIMB-SHAKING SYNDROME: A HYPERKINETIC PRESENTATION OF TRANSIENT ISCHEMIC ATTACK

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Introduction: Limb-Shaking Syndrome (LSS) is a unique form of transient ischemic attack (TIA) characterized by seizure-like hyperkinesias resulting from cerebral hypoperfusion and autonomic dysregulation.

Case Report: A 98-year-old male with a history of moderate dementia, coronary artery disease, and recent cerebrovascular accident presented with multiple episodes of convulsions with unresponsiveness. His symptoms were head shaking, left arm shaking, and staring while remaining unresponsive to verbal or tactile stimuli. Each episode lasted 10–15 seconds before resolving, without tongue biting, incontinence, or a postictal period. His recent history only revealed 1–2 days of diarrhea occurring prior to symptoms. A physical examination was benign, aside from left-sided carotid bruit and baseline dementia. The patient was admitted for a seizure work-up. The head computed tomography scan, magnetic resonance imaging scan, and electroencephalogram were negative. Lab results were also normal. A trial of carbamazepine was initiated, yet symptoms persisted. Carotid Dopplers exposed critical/complete stenosis in the right intracranial artery (ICA) and 70–80% stenosis in the left. A head magnetic resonance angiography revealed diminished flow in the right middle cerebral artery. An additional history confirmed that symptoms occurred mostly with maneuvers inducing orthostasis. The imaging results combined with the adjuvant history pointed toward a diagnosis of LSS. This form of TIA was secondary to preocclusive right ICA disease and diarrhea-induced orthostasis. Given the patient's advanced age, definitive surgical treatment was supplanted by conservative management with medication.

Discussion: This case aims to increase awareness and demonstrate the potential for TIA to manifest in an uncommon hyperkinetic fashion easily confused with focal motor seizure. Prompt diagnosis and treatment are vital to improving patient quality of life as well as decreasing the chances of future strokes.

C14 THE DERIVATION AND CHARACTERIZATION OF A NEW HUMAN PARACHORDOMA CELL LINE FROM A SCAPULAR TUMOR: A CASE REPORT

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Introduction: Parachordomas are rare epithelial tumors—often benign neoplasms—that very rarely metastasize. They often develop on the extremities adjacent to tendons, synovium, or osseous structures. Very few studies have been conducted to study this cancer. In addition there is a lack of a good in vitro model to perform more characterization on it.

Case Report: In a 28-year-old male with a right scapular tissue mass the cytomorphology and the immunohistochemistry were consistent with a rare parachordoma case. A part of the original tumor was put in cell culture. Then, cells were cultivated subcutaneously in immunocompromised mice. After 3 months, a rapid-growing tumor appeared from which we derived a new cell line. Cytogenetics and cell culture parameters confirmed the transformation and the neoplastic characteristics of this parachordoma-derived cell line. In conclusion, we have obtained the first described human parachordoma cell line. This in-vitro model can be a new tool in the basic research on the very rare parachordoma cancer.

C15 CEREBROTENDINOUS XANTHOMATOSIS DIAGNOSED WITH BILATERAL ACHILLES TENDON MASSES

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Case Report: A patient presented to an orthopedic clinic with bilateral Achilles tendon masses and was subsequently diagnosed with cerebrotendinous xanthomatosis. This is a lipid-storage disease secondary to a disruption in cholesterol metabolism. In the absence of the key enzyme sterol 27-hydroxylase, other metabolites are increased, such as cholestanol. This elevated concentration results in characteristic clinical findings such as bilateral cataracts, tendon xanthomas, and neurologic impairments including debilitating cerebellar ataxia and cerebral degeneration. Treatment with chenodeoxycholic acid replenishes the key bile acid in humans and as a result prevents the upregulation of cholesterol and cholestanol synthesis. This remedy may decrease the size of xanthomas; however, reversing neurological deficits is rarely successful. Ultimately, the early diagnosis and initiation of treatment is critical for the future well-being of these patients before permanent detrimental effects take place.

C16 ASYMPTOMATIC SCAPHOLUNATOTRIQUETRAL FUSION WITH 12-YEAR FOLLOW-UP

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Case Report: Several combinations of carpal fusions have been described, with lunatotriquetral the most predominant. Typically, they are incidental findings and usually involve two carpal bones; multicarpal fusions do exist, although they are less common. Secondary hand anomalies may coexist with these coalitions. We report on a 47-year-old male with an asymptomatic scapholunatotriquetral fusion associated with a hypoplastic first metacarpal and a 12-year follow-up. There is only one other reported case of scapholunatotriquetral coalition in the literature; however, this was symptomatic.

C17 COLLATERAL TRANSFORMATION OF THE HEPATIC ARTERY

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Introduction: Hepatic artery thrombosis (HAT) in the post-liver transplant patient is a significant cause of morbidity and mortality. Ultrasounds are very sensitive for the diagnosis of HAT in the acute setting. The detection of compromise to the vascular supply of the allograft in the subacute setting (>10 days) represents a challenge to radiologists and transplant surgeons. A high rate of false negative ultrasound examinations with regard to evaluation for HAT in the setting of collateral arterial vessel formation has been documented. Subacute hepatic artery compromise with collateral vessel formation can be subclinical; we believe this phenomenon may occur more commonly than currently appreciated.

Case Report: We discuss two cases of subacute hepatic artery compromise with collateral arterial vessel formation that were diagnosed in July 2007 prospectively by ultrasound and confirmed by angiography. We refer to this phenomenon as collateral transformation of the hepatic artery. This represents a radiologic sign not previously described: occlusion of the transplanted hepatic artery in the subacute setting. Recognizing this radiologic finding has significant patient management implications.

C18 RECURRENT POST STREPTOCOCCAL VASCULITIS IN A PEDIATRIC PATIENT SUCCESSFULLY TREATED WITH PROPHYLACTIC ANTIBIOTICS

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Case Report: A 2.5-year-old Caucasian male presented to Children's Hospital in New Orleans in 1992 with fever; a purpuric rash on his bilateral lower extremities, buttocks, and hands; and arthritis of the bilateral knees. He was found to have an elevated erythrocyte sedimentation rate (ESR) and antistreptolysin O (ASO) titer. The lesions progressed to ulcerations and new lesions formed on his scrotum, so treatment with corticosteroids was begun. His systemic symptoms resolved, but the lesions on his lower extremities progressed to dry gangrene and required skin grafting. He was subsequently given intravenous immunoglobulin and continued on systemic corticosteroids, with resolution of his symptoms and laboratory abnormalities. He presented again at the age of 5 with recurrent arthritis of the knees and arms, fever, macular erythematous rash, a right wrist drop, and elevated ESR with a history of streptococcal pharyngitis treated 3 weeks earlier. An ASO titer was drawn and was again elevated to 553 Todd units per mL. A biopsy of the skin lesion showed leukocytoclastic vasculitis. He was treated with corticosteroids and started on Bicillin (600,000 units per month) for prophylaxis. He had two more recurrences with similar symptoms of fever, rashes, arthritis, increased inflammatory markers, and elevated ASO titers until he was placed on a Bicillin dose of 1.2 million units every 21 days. He has been recurrence-free for the past 6 years and is now 17 years old.

Discussion: Poststreptococcal vasculitis has been described in several case reports, but few patients have recurrent symptoms or are treated with prophylactic antibiotics. This case demonstrates that prophylactic antibiotics may be effective in preventing recurrences of streptococcal vasculitis.

C19 TUMOR-NECROSIS FACTOR-ALPHA INHIBITOR INDUCED AGRANULOCYTOSIS

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Case Report: A 64-year-old Caucasian woman with history of rheumatoid arthritis for approximately 30 years, who had been on Enbrel and methotrexate with low-dose corticosteroids intermittently with a good response, presented to the clinic in January 2005 and was found to have mild leukopenia after routine laboratory testing. Repeat testing 1 month later revealed worsening leukopenia with a white blood cell count of 2,980 and an absolute neutrophil count (ANC) of 447. Both methotrexate and Enbrel were held, and her leukocyte count and ANC improved. She was restarted on Enbrel at 50 mg weekly because of a disease flare and developed leukopenia with agranulocytosis approximately 1 month later. Enbrel was discontinued, and a bone marrow biopsy revealed a recovering marrow secondary to a medication insult. The patient's ANC improved but her arthritis remained uncontrolled, so Enbrel was restarted at 25 mg weekly. The patient redeveloped leukopenia and severe neutropenia with an ANC of 92, requiring administration of granulocyte colony-stimulating factor. Enbrel was discontinued, and she was later started on Orencia after her leukocyte and granulocyte counts recovered. She has remained in remission since then.

Discussion: There have been only a couple of case reports in the literature about tumor necrosis factor-alpha inhibitors causing neutropenia, but none have reported agranulocytosis. All physicians who treat patients using these medications should be aware of the potential but rare risk associated with them. In this case, the patient was re-challenged with worsening of the ANC a second and third time. The problem was easily remedied by switching to a different class of biologic medication.

C20 HEPATIC FAILURE ASSOCIATED WITH TUMOR NECROSIS FACTOR-ALPHA INHIBITORS

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Introduction: Tumor necrosis factor-alpha (TNF-α) is a pro-inflammatory cytokine that has been shown to play an essential role in the pathogenesis of rheumatoid arthritis. Concern over safety becomes a major issue with the growing use of these agents: TNF-α inhibitors have been known to cause adverse events, such as injection site reactions, infections, lymphomas, congestive heart failure, demyelinating disorders, cytopenias, and drug-induced lupus. Rarely has hepatoxicity been found.

Case Report: We present three cases of patients with elevated liver function tests. The biopsies were all consistent with a drug-induced etiology. They each had been given TNF-α inhibitors several weeks to months prior to presenting with liver dysfunction. Two of the patients improved within months of stopping the TNF-α inhibitors with corticosteroid treatment; the other required a liver transplant.

Discussion: The Food and Drug Administration (FDA) has identified 134 cases of liver failure in patients who had received TNF-α inhibitors. The FDA has reported seven cases of hepatotoxicity, which could be linked to TNF-α inhibitor use without a concomitant hepatotoxic agent. Hepatotoxicity is a rare but major concern about the use of these agents. When it does occur, it may cause life-threatening illness.

C21 ACUTE HIP MONOARTHRITIS WITH ACCUTANE

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Introduction: Vitamin A derivatives are used to treat dermatological conditions such as acne. Retinoids have been known to cause musculoskeletal symptoms. Some of vitamin A's common musculoskeletal side effects include premature epiphyseal plate closure, the calcification of ligaments and tendons, hyperostosis, osteoporosis, and osteomalacia. Arthritis can also occur with these agents.

Case Report: A 44-year-old white male presented with the sudden onset of right hip pain. He was evaluated in the emergency department, and a computed tomography scan found effusion in his right hip. Tests for the erythrocyte sedimentation rate and C-reactive protein were within normal limits. A culture of joint fluid was negative, as was a crystal examination. Joint fluid analysis showed a white blood cell count of 25,000 cells/mcL. After a review of his medications, it was noted that he had started taking Accutane for acne about 3 months earlier.

Discussion: About 15% of patients develop arthralgias from isotretinoin treatment. Arthritis can develop about 2 to 10 weeks after initiating therapy. Most cases reported occur in large joints, with the knee being the most common location. Joint symptoms usually disappear within weeks after the discontinuation of the drug. Cases also have been reported of resolution while the patient is still taking the medication. The pathology of this condition is unknown. Several hypotheses have been proposed, including the fact that isotretinoin may have a cytotoxic effect on the synovial membrane. However, this hypothesis has been disputed because no arthroscopic findings indicated synovial membrane toxicity.

C22 SARCOIDOSIS MANIFESTED AS GENERALIZED LYMPHADENOPATHY RELATED TO THE USE OF ETANERCEPT

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Introduction: Anti-tumor necrosis factor-alpha (TNF-α) drugs have been associated with the development of both infectious granulomas, including tuberculosis and fungal infections. There have been case reports of both pulmonary and cutaneous sarcoidosis with the use of TNF-α in patients who have inflammatory arthritis. We report on the first patient who developed generalized lymphadenopathy, which on biopsy confirmed noncaseating granuloma in a patient receiving therapy with etanercept.

Case Report: A 58-year-old Caucasian female had a history of seronegative rheumatoid arthritis diagnosed by another physician in 1998. He had treated her with methotrexate and prednisone. She presented in August 2001 with pain in her feet, hands, and legs and morning stiffness lasting several hours and sometimes all day. She had swelling and tenderness of both wrists, both knees, her left elbow, the 2nd and 3rd metacarpophalangeal joints, and the 2nd, 3rd, 4th, and 5th proximal interphalangeal joints of both hands. She was felt to have seronegative rheumatoid arthritis and was started on etanercept in August 2002. In June 2007 she developed a cough and computerized axial tomography showed a pulmonary nodule. She then had a positron emission tomography scan, which showed hypermetabolic adenopathy in her neck, chest, abdomen, pelvis, and proximal thighs, but the nodule in her chest did not have an increased uptake. A biopsy of the lymph node revealed noncaseating granuloma consistent with sarcoid.

C23 A PULMONARY RHEUMATOID NODULE DEVELOPING DURING ETANERCEPT-LEFLUNOMIDE REMISSION IN RHEUMATOID ARTHRITIS

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Introduction: The use of anti-tumor necrosis factor-alpha (TNF-α) therapy and disease-modifying anti-rheumatic drugs (DMARDs) has been associated with both cutaneous and pulmonary rheumatoid nodules. We performed a retrospective review of data collected regarding a patient with rheumatoid arthritis who had pulmonary rheumatoid nodules and was treated with etanercept, even though his synovitis was in remission. In addition, a PubMed search (1980–present) for drug-associated rheumatoid nodules was conducted. Both pulmonary and subcutaneous rheumatoid nodules have been reported with the use of methotrexate, leflunomide, azathioprine, etanercept, and infliximab.

Case Report: A 52-year-old male was diagnosed with rheumatoid arthritis in 1997. At that time he had synovitis of the 2nd and 3rd metacarpophalangeals and also had a rheumatoid nodule on the left forearm. From 1997–2001 he was treated with multiple medications, including prednisone, Azulfidine, hydroxychloroquine, methotrexate, intramuscular gold, and leflunomide. In July 2001, he was started on etanercept, which is an anti-TNF-α. Three years later he developed weight loss, and pulmonary nodules were seen on a chest x-ray. At this time his synovitis was in remission. A biopsy of the nodule revealed a central area of necrosis surrounded by a peripheral zone of fibrosis and histiocytes, consistent with a rheumatoid nodule. Etanercept use can be associated with rheumatoid nodules in the lungs.

C24 THE ENDOVASCULAR REPAIR OF A RUPTURED INTERNAL ILIAC ARTERIAL ANEURYSM WITH A NOVEL APPLICATION OF THE AORTO-UNI-ILIAC CONVERTER DEVICE

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Endovascular repair of a ruptured internal iliac arterial aneurysm with a novel application of the aorto-uni-iliac converter device. Vascular and Endovascular Surgery: in press.

C25 A TECHNIQUE FOR INCREASED ACCURACY IN THE PLACEMENT OF THE GIANT PALMAZ STENT FOR THE TREATMENT OF TYPE IA ENDOLEAKS AFTER ENDOVASCULAR ANEURYSM REPAIR

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A technique for increased accuracy in the placement of the ''giant'' Palmaz stent for treatment of type IA endoleak after endovascular abdominal aneurysm repair. Journal of Vascular Surgery: in press.