

Proceedings from the 2003 Annual Meeting of the American College of Physicians, Wisconsin Chapter

Edited by Kesavan Kutty, MD, FACP, Chapter Governor

INTRODUCTION

The Wisconsin Chapter of the American College of Physicians held its annual meeting in Waukesha, Wis, September 5-7, 2003. Internal Medicine residents from each of Wisconsin's 5 residency programs (Gundersen Lutheran Health System, Marshfield Clinic, The Medical College of Wisconsin, University of Wisconsin Hospital and Clinics, and University of Wisconsin Milwaukee Clinical Campus [Aurora Sinai Medical Center]) presented their research and/or unusual clinical experiences via posters and vignettes. On behalf of the Chapter, it is my pleasure to provide the text versions of their presentations, in an attempt to not only showcase the scholarly work of these physicians in training but also to provide *Wisconsin Medical Journal* readers an overview of the quality of care given by them in the fine residency programs in our state. Finally, although these minimally edited Proceedings are by themselves very educational, being there to listen to them live is, indeed, priceless. On behalf of our Chapter, I invite you to witness this unique experience at our next Chapter meeting, September 9-11, 2004, at the Marriott Milwaukee West in Waukesha, Wis.

POSTERS

Accuracy of Noninvasive Ejection Fraction Measurements in a Large Community-Based Hospital

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Introduction: Left ventricular ejection fraction (LVEF) is an important parameter in assessment of cardiac mortality, morbidity, and prognosis. Although previous studies comparing echocardiography (echo) or nuclear imaging (nuclear) of LVEF to cardiac angiography (cath) suggest these are all similar, the studies were done in academic centers, using relatively small sample sizes. Since noninvasive LVEF is routinely used to assess cardiac patients, every in-

stitution should assess noninvasive LVEF accuracy with cath, preferably using large sample sizes. Thus, the purpose of this study was to review the accuracy of LVEF by echo or nuclear compared to cath at a community hospital using a large series of patients over several years.

Methods: Using the American College of Cardiology National Cardiac Data Registry at our institution from 1999 to 2002, we reviewed retrospectively LVEF in 515 patients undergoing echo and cath within the same hospitalization. A separate group of 307 patients with LVEF by cardiac nuclear imaging studies and cath were also studied. All procedures were done within the same hospitalization. The LVEF for each noninvasive technique was compared to cath using t-test, mean/standard deviation and linear regression analysis.

Results: LVEF was significantly different and lower by both echo and nuclear, compared to cath. The LVEF by echo was about 5% lower while nuclear was about 8% lower (49% + 15% vs 54% + 14%, for echo versus cath; and 49% + 13% vs 57% + 13% for nuclear versus cath). However, for all 515 echo patients, there was a significant correlation with cath ($r=0.71; P<.001$). A significant correlation was also seen between nuclear and cath LVEF ($r=0.4; P<.001$).

Conclusion: Noninvasive evaluation of LVEF by either echocardiographic or nuclear imaging techniques have lower values compared to cath in a community-based hospital such as ours where a large number of patients are studied. These results highlight the need of individual institutions providing noninvasive assessment of LVEF to determine the accuracy of each technique used. The results also indicate that the accuracy of noninvasive LVEF should be taken into account when using this information in management and prognosis in patients with cardiac conditions.

Acute Pericarditis

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Acute pericarditis typically follows a benign course, especially when idiopathic or viral in origin. Early diagnosis is important, however, as serious hemodynamic compromise can result. Further, distinguishing this condition from acute myocardial infarction helps initiate proper treatment.

A young man presented with acute onset of chest pain and fever; physical

examination showed a friction rub determined to be due to acute pericarditis. Evaluation showed a large pericardial effusion, with significant and striking radiographic, echocardiographic and electrocardiographic findings. The patient demonstrated the cardinal features of both acute pericarditis and pericardial effusion. Furthermore, his work-up and management demonstrated the challenging diagnostic considerations in idiopathic forms of these disease entities. Large pericardial effusions with early tamponade as was shown in this young man are very rare in the setting of acute pericarditis.

Acute pericarditis remains an important diagnostic possibility in anyone presenting with acute chest pain. Consideration of this early in the diagnostic process allows expeditious and appropriate management.

An 80-Year-Old Man with Obscure Occult GI Bleeding

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An 80-year-old man admitted to our institution with a 1-week history of presyncopal symptoms, fatigue, weakness, and dyspnea on exertion. He had been hospitalized 4 times in the past 10 months for similar complaints. Each time anemia and guaiac-positive stools were found. He had required transfusion of 16 units of packed red cells (PRBCs) over these previous admissions. The etiology of his GI bleeding remained unknown despite 4 upper GI endoscopies, 3 colonoscopies, 2 tagged red blood cell scans, enteroscopy, small bowel follow through, and a Meckel's scan. The patient reported dark appearing stools since starting oral iron therapy 6 months previously. He had no recent NSAID or alcohol use, abdominal pain, hematemesis, hematochezia, or weight loss. He had a prior history of a porcine aortic valve replacement, hypertension, and chronic renal insufficiency.

Physical examination revealed stable vital signs without orthostatic hypotension. The abdomen was not distended and had normal, active bowel sounds; it was without tenderness or organ enlargement. Rectal examination showed

small external hemorrhoids with no bleeding and no fissures. It demonstrated a small amount of dark, guaiac-positive stool. The remainder of the exam was unremarkable. Laboratory data included an Hgb of 8.7g/dL, Hct 26.7%, platelets 224,000/mm³, INR 1.1, PTT 31.5 sec, and creatinine of 1.5 mg/dL (baseline for the patient). Electrolytes, BUN, liver tests, LDH, and haptoglobin were all normal.

The patient was admitted with a diagnosis of obscure occult GI bleeding. Capsule endoscopy was performed because all previous investigations were nondiagnostic. This revealed multiple arteriovenous malformations in the first and second portion of the duodenum. Repeat enteroscopy with argon plasma coagulation was done and erythropoietin therapy begun.

Obscure occult GI bleeding refers to the presence of guaiac-positive stools and/or iron deficiency anemia without evidence of visible fecal blood, which persists or recurs after a negative colonoscopy and/or endoscopy. As many as 30% to 50% of occult bleeding cases have no source identified after primary investigation. Most of these cases do not evolve into obscure bleeding; however, for those that do, further investigation is required. Overall, angiodysplasia is the most common etiology of obscure GI bleeding, followed by small bowel neoplasia.

Capsule endoscopy is a relatively new technology finding its place in the evaluation of obscure bleeding. Its advantages include being noninvasive, allowing an evaluation of the entire small bowel, permitting a "physiologic endoscopy," meaning the patient is not altered by the exam, and allowing for the localization of lesions prior to any necessary surgical intervention. It is likely that capsule endoscopy will have a primary role in the evaluation of obscure GI bleeding as experience with this exciting new technique grows.

Calcified Neurocysticercosis Lesions with Post-Therapy Perilesional Edema

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Neurocysticercosis is probably the

most common parasitic brain infection and the most common cause of adult-onset epilepsy worldwide. In the United States, it is diagnosed sporadically in immigrants from endemic areas. Antiparasitic treatment of this condition allows destruction of neurocysticerciae in a controlled setting. Calcified lesions have been assumed to be dead and current recommendations do not support treatment with either praziquantel or albendazole.

A 35-year-old Mexican-American man presented with new onset of grand mal seizure. He had a history of partial seizures previously. His physical examination including neurological examination was normal and he was managed with anti-epileptics. An MRI showed 3 calcified parenchymal brain cysts consistent with old neurocysticercosis, a few thin-walled structures presumed to be still-viable cysts, and one lesion with active inflammation around it. This latter lesion was presumed to have caused the grand mal seizure. The patient was admitted and started on albendazole and high dose dexamethasone. An MRI done 3 days into treatment did not show any new changes and the patient was discharged to complete a 4-week course of albendazole and tapering corticosteroids. Five days after ending corticosteroid therapy, he had a focal seizure. MRI and CT showed significant new perilesional enhancement around one of the presumably old calcified lesions. Following the completion of a 28-day course of albendazole, corticosteroids, and antiepileptics the patient did well.

Perilesional edema surrounding calcified neurocysticercosis lesions has not been previously reported following treatment. This new observation implies that viable cysticercos can exist within calcified lesions. If true, patients with only calcified lesions on CT or MRI might still benefit from anthelmintic therapy.

Central Pontine Myelinolysis/Osmotic Demyelination Syndrome: The Marshfield Clinic Experience

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Central Pontine Myelinolysis (CPM) is a rare demyelinating disease of the pons. The term Osmotic Demyelination

Syndrome (ODS) is reserved for when the pathologic process involves both pontine and extrapontine sites. The etiology and pathogenesis of CPM has not been clearly defined. The disease occurs in the setting of severe underlying concomitant illness.

The majority of cases of CPM reported in the literature have been associated with a history of chronic alcohol abuse. Electrolyte disturbances including hyponatremia, hypernatremia, and hypokalemia have been reported. CPM was initially described in the setting of rapid correction of hyponatremia. Hypokalemia has been suggested to predispose patients to ODS in the presence of hyponatremia.

The clinical manifestations of CPM are variable, and depend on the region(s) of the central nervous system involved. Myelinolysis occurs in those areas of the brain with a relatively high gray/white interface including the pons, cerebellum, basal ganglia and cerebral cortex or subcortex. The cardinal symptoms include disturbed level of consciousness, pseudobulbar symptoms (dysphagia, dysarthria), and abnormalities of gait (paraparesis, ataxia, or spastic quadriparesis).

Our understanding and experience of this disease has predominately come from case reports and literature reviews. Few single institution case series have been reported. We retrospectively evaluated the data of a total of 6 cases of CPM evaluated at the Marshfield Clinic/St. Joseph's Hospital from 1986-2003. Five of these were associated with alcohol abuse, and only 1 had associated electrolyte disturbances. Lethargy was the most common presenting complaint (5/6 patients), followed by dysarthria (4/6 patients). All patients improved with treatment. Our findings illustrate that the presentation of CPM can be nonspecific and that maintaining a high index of suspicion, particularly in patients at high risk, can lead to early diagnosis and better outcomes.

A Classic Presentation of a Rare Disease

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A 67-year-old Norwegian-American

man presented with progressive weight loss, diarrhea, and arthralgias. He had a long history of symmetric joint pain in his hands and knees. Over the past year he had experienced increasing weakness and fatigue and had lost approximately 50 pounds. During the past month his stool frequency had increased to 6-8 loose, non-bloody bowel movements per day. He had a past history of type 2 diabetes mellitus and hypothyroidism. The patient denied abdominal or rectal pain, nausea, vomiting, fevers, chills, or night sweats. He was cachectic on physical examination, with pale conjunctivae but no icterus. His abdomen was thin, but soft without any palpable masses or organomegaly. Neurologically, he had poor short-term memory and a disconjugate lateral gaze. He also had diffuse hyperreflexia with bilateral ankle clonus and plantar extensor responses. His laboratory values were significant for mild hyponatremia, iron-deficiency anemia, hypoalbuminemia, vitamin D deficiency, and guaiac positive stools. At upper endoscopy, the second and third portions of the duodenum exhibited diffusely scalloped and friable mucosa with adherent whitish plaques. Biopsies of this region showed lamina propria infiltrated by large foamy macrophages, which stained PAS positive and acid-fast negative. Electron microscopy verified the presence of the bacillus characteristic of Whipple's disease.

Whipple's disease is a rare chronic systemic disorder caused by infection with the bacterium *Tropheryma whippeli*. Although the clinical manifestations are highly variable, Whipple's disease should be considered in all patients with diarrhea, weight loss, arthralgias, and abdominal pain. Endoscopic biopsy of the small intestine is the diagnostic test of choice. Without treatment, Whipple's disease can be fatal. Because of the high frequency of neurological involvement, a 2-week course of parenteral therapy with an agent that penetrates the blood-brain barrier, such as ceftriaxone (or penicillin plus streptomycin), followed by long-term therapy (=1 year) with oral trimethoprim-sulfamethoxazole is recommended.

Don't Worry: It's Only Gadolinium

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Contrast-aided radiological imaging is frequently and increasingly used to assist in making a diagnosis. During the last few decades, attempts have been directed at minimizing the adverse effects of the use of radiographic contrast. Because of the safety of gadolinium-based contrast agents over iodine-based agents, MRI is frequently the alternative for imaging of at-risk patients, such as those with renal insufficiency. However, there are a few reported cases of toxicity with the use of these agents. The following is a report of an acute worsening of renal insufficiency following the administration of a gadolinium-based contrast agent.

A 72-year-old African-American woman presented to the emergency department with a 6-day history of generalized fatigue, mild confusion, and loss of appetite. She had a history of chronic kidney disease presumably secondary to long-standing hypertension. The patient associated the onset of her acute illness with an abdominal MRA that was done to evaluate for renovascular hypertension. Thirty milliliters of a gadolinium-based contrast agent were administered for the procedure. The patient's BUN and Creatinine had risen to 98 mg/dL and 11.4 mg/dL respectively on the day of admission from a baseline of 40 mg/dL and 2.6 mg/dL respectively. After approximately 2 weeks of hospitalization the patient's renal function returned to baseline. Other conditions such as prerenal causes, acute interstitial nephritis, and glomerulonephritis were excluded. It was therefore determined that gadolinium was the likely etiology of the temporary worsening of her renal function.

The incidence of gadolinium-induced nephrotoxicity is not well established. Although there are many sources that attest to the safety of gadolinium, this case demonstrates that the keen clinician should use caution when considering the use of this agent as an alternative to iodine-based contrast in a patient with renal insufficiency. This case also

suggests that further studies on gadolinium should be done to assess its true safety.

Gastric Bypass Surgery for Morbid Obesity: Not All It's Cut Out to Be

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A 48-year-old woman was admitted to the ICU due to hypoglycemic encephalopathy. Her past medical history was significant for type 2 diabetes mellitus, chronic pancreatitis, and alcohol and cocaine abuse. A gastroenterology consult was obtained for a PEG tube placement. During the endoscopy it was noted that the stomach was markedly contracted and there was a gastrojejunal anastomosis with a visible ring in the upper part of the stomach at the site of the anastomosis. Disruption of the gastric partition was also noted. The patient was reportedly totally asymptomatic. By history the patient had undergone Roux-en-Y bypass surgery for morbid obesity about 21 years ago and did not have regular follow-up.

Morbid obesity significantly reduces life span and is associated with much comorbid pathology. A team including a primary physician, gastroenterologist, psychologist, dietitian, and surgeon usually manages it. The poor long-term results of medical management, medications, and behavioral therapy have increased the number of patients being referred for surgical treatment. Gastric bypass and vertical banded gastroplasty are commonly recommended procedures. In the past, the surgical approach to morbid obesity occasionally included placing a ring around the outlet stoma to reinforce the gastrojejunal anastomosis. The incidence of ring erosion was reported to be unacceptably high. This technique using a ring is now rarely used and there is a paucity of reports in the literature regarding the occurrence of ring erosion. In our case, the ring erosion was discovered incidentally with no known previous symptoms. The incidence of the late breakdown of gastric partition varies from 2% to 15%. This case re-emphasizes the need for close follow-up after surgical management of the obese patient.

Got Milk?

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A 36-year-old white woman, gravida 4, para 2, began complaining of blurry vision, increasing thirst, urinary frequency, increasing forgetfulness, and confusion 3 days after delivery. She had no postpartum hemorrhage and had been breast-feeding. Her gestation was unremarkable except for an episode of first trimester bacterial vaginosis. Past medical history included trace mitral regurgitation due to mitral valve prolapse, requiring antibiotics during labor. She had a childhood history of anorexia nervosa resulting in vertebral fractures after the birth of her first child 5 years ago. Subsequently, she had been on oral calcium and vitamin D supplementation, resulting in improvement in her bone mineral density. A more detailed history revealed calcium consumption of 5000 mg per day from over-the-counter supplements, calcium-enriched orange juice, and dairy products. With the exception of mild confusion, her physical examination was normal. Laboratory studies (normal values shown in parentheses) showed a serum calcium 15.0 mg/dL (8.5-10.4), albumin 3.4 g/dL, phosphorus 3.4 mg/dL, alkaline phosphatase 112 IU/L, creatinine 1.1 mg/dL, 25-hydroxyvitamin D 55 ng/ml (8-38), 1,25-dihydroxyvitamin D 21 pg/ml (22-67), N-telopeptide 8.8 nmol BCE/L (8.7-19.8), and PTH intact 2 pg/ml (10-65). Prolactin, estradiol, and calcitonin levels were appropriate considering her postpartum and lactation status. Parathyroid hormone-related protein (PTH-rP) drawn at a later date, but during lactation was 0.4 pmol/L (< 1.3). She had resolution of her symptoms after intravenous hydration with normal saline. Serum calcium normalized after discontinuation of the oral calcium and vitamin D. Her final diagnosis was milk-alkali syndrome following excessive calcium and vitamin D intake during lactation.

Symptomatic hypercalcemia in lactating women is rare. In addition to this case of milk-alkali syndrome, 2 other situations that cause hypercalcemia during lactation have been described in the medical literature: (1) treatment of hypoparathyroid women after delivery

with calcium and vitamin D; and 2) excess secretion of PTH-rP from lactating breast tissue. This case suggests that even in women without prior hypoparathyroidism or elevated PTH-rP, lactation in combination with excessive calcium and vitamin D can induce milk-alkali syndrome. This is the first reported case of milk-alkali syndrome in a lactating woman. Physicians should be aware of this association and be cautious when recommending high doses of calcium and vitamin D in this situation.

"Help! My Heart is in 'Arms' Way!"

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A 73-year-old man presented with complaints of recurrent exertional dyspnea and new onset angina. Investigation of the dyspnea 7 months prior to presentation prompted cardiac catheterization revealing 70% left anterior descending artery (LAD) stenosis, 80% circumflex artery stenosis, and 60% right coronary artery stenosis. Coronary artery bypass grafting was performed, grafting the left internal mammary artery to the LAD, and a saphenous vein graft to the right coronary and obtuse marginal arteries. His post-operative hospital course was uncomplicated. However, after returning home, the patient reported continued dyspnea with activity. He also experienced exertional angina, which had not been a complaint prior to coronary artery bypass grafting. During a follow-up clinic visit, bilateral carotid bruits were discovered. Subsequent carotid duplex ultrasonography was performed revealing right and left internal carotid stenoses of less than 40%; in addition, retrograde flow was noted in the left vertebral artery during systole, consistent with left subclavian artery steal. Careful vascular examination revealed a delayed and diminished left radial pulse compared to the right side on simultaneous palpation, blood pressure of 166/80 mmHg in the left arm and 185/70 mmHg in the right arm, and harsh bruits above and below the left clavicle. Arch aortogram with selective left subclavian artery injection demonstrated an 80%-90% eccentric proximal

subclavian artery stenosis. There was no forward flow to the left internal mammary artery, which was supplying the LAD. This lesion was stented and there was no residual luminal narrowing. Arm pressures equalized and the patient's exertional angina resolved.

Coronary-subclavian steal syndrome is a rare cause of myocardial ischemia following coronary artery bypass grafting, with an incidence of 0.4%-0.7% when the internal mammary artery is used as a conduit. The subclavian artery is proximally stenosed with the distal portion shunting blood flow away from the smaller caliber internal mammary arterial graft, resulting in cardiac ischemia. Simply measuring blood pressures in both arms with careful attention to the physical examination prior to cardiac catheterization can lead to the diagnosis of this problem and its timely correction, thus preventing post-bypass ischemia.

The Kinked Pulmonary Artery Catheter

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Pulmonary thromboembolism (PE) can be a fatal complication of immobilization following spinal cord injury. A 42-year-old woman (Jehovah's witness) who sustained a C4 fracture was admitted for inpatient rehabilitation. The patient was found to be pulseless and CPR was initiated. Following resuscitation, the patient was transferred to the ICU where she required mechanical ventilation and pressor agents to maintain blood pressure. Physical examination and radiographic and laboratory studies did not provide evidence as to the cause of cardiovascular collapse. The patient had received prophylaxis for deep venous thrombosis (DVT), which had been discontinued a few days prior to ICU transfer. A pulmonary artery (PA) catheter was placed, which initially coiled in the right ventricle and was successfully repositioned into the right PA. An unusual and distinct kink was noted in the PA catheter in the area of the main pulmonary artery. The PA catheter demonstrated a PA sys = 52 mm Hg, a

CI = 1.2 l/min/m² and a SVR = 2700 dynes-sec-1-cm⁵. Based on the patient's risk for DVT and pulmonary embolism (PE) and the PA catheter readings, intravenous heparin therapy was initiated. A helical CT demonstrated a saddle PE. Consideration was given to using thrombolytic therapy for the PE and cardiogenic shock. However, following an assessment of the patient's risk factors for hemorrhage, significant baseline anemia and documented refusal in her advanced directive to accept red blood cell transfusion, the decision was made against thrombolytic therapy. A subsequent chest x-ray demonstrated resolution of the kink in the PA catheter following about 48 hours of heparin therapy, which was thought to be related to partial dissolution of the PE. The patient remained in cardiogenic shock and care was withdrawn per the instructions of the power of attorney for health care. The case demonstrates the importance of DVT prevention in patients with spinal cord injury and the special consideration that has to be given when considering thrombolytic therapy to a patient who refuses blood transfusion. A kink in a PA catheter should lead one to consider PE.

Mysterious Fluid

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A 56-year-old woman presented to the emergency department with epigastric pain and severe nausea for 1 day. The pain was constant with nausea, dry heaves, myalgias, and 3 loose stools on the day of admission. She had no fever, chest pain, dyspnea, or dysuria, and her past medical history was significant for emphysema, hypertension, hypothyroidism, and atrial fibrillation. A mammogram was normal 3 months before admission, and she had no recent change in her medications. Physical examination showed sPO₂ of 88% on room air and dullness to percussion and decreased breath sounds in the right lower chest, consistent with a right pleural effusion confirmed to be free flowing by chest radiograph. Basic metabolic panel, hepatic function panel, lipase, TSH, and lipid profile were normal. Blood cultures were neg-

ative, and CBC was essentially normal. Thoracentesis yielded fluid with characteristics of a chylothorax. Cytological examination was negative for malignancy, and CT scan of the chest, abdomen, and pelvis was remarkable only for the pleural effusion and mediastinal lymphadenopathy. Mediastinoscopy found benign mediastinal lymph nodes. Chest tube drainage and pleurodesis were performed, and at follow-up, the patient remained asymptomatic with no re-accumulation of pleural fluid.

Chylothorax is a relatively rare instance of pleural effusion. It may be traumatic (postsurgical, compression) or non-traumatic (malignancy, lymphangioliomyomatosis, sarcoidosis, etc). Idiopathic chylothorax is even less common and is a diagnosis of exclusion. It has been anecdotally associated with weight lifting, vomiting, coughing, and high fat intake. In some cases, a lymphoma or other malignancy becomes apparent at a later date. Therapy frequently requires surgical intervention with close clinical and radiological follow-up, irradiation and chemotherapy for malignant causes and dietary modifications with low fat intake except medium-chain triglycerides.

A Really Coryne Case

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A 73-year-old woman was admitted for a fever of 5 days duration accompanied by chills, nausea, vomiting, and poor appetite. The patient's medical history included end-stage renal disease on hemodialysis via an AV fistula, chronic atrial fibrillation, permanent pacemaker placement, prosthetic aortic and mitral valves, and type 2 diabetes mellitus. She was febrile with a maximum temperature of 103°F. She also had a grade III/VI systolic ejection murmur, which was an old finding. No conjunctival hemorrhage, Janeway lesions, Osler's nodes, rose spots, or splenomegaly were detected. *Corynebacterium striatum* (*C. striatum*) was cultured from 3 consecutive blood cultures, and a rheumatoid factor was positive. Transesophageal echocardiography revealed thickening of the mitral valves. The diagnosis of infective endocarditis was made based on

modified Duke criteria: 1 major (positive cultures) and 3 minor criteria (prosthetic valve, fever, and positive rheumatoid factor).

Six weeks of treatment with intravenous ceftriaxone (2g/day) was administered based on sensitivity data (MIC 4mg/ml). However, 4 weeks after finishing treatment the patient presented with a relapse of symptoms and multiple blood cultures again grew *C. striatum*. In addition, transesophageal echocardiography revealed the presence of a thickened aortic valve with a 3-5mm vegetation indicating treatment failure.

Although native valve endocarditis due to *C. striatum* is well known, this rare instance of *C. striatum* prosthetic valve endocarditis is only the third case report to our knowledge. *C. striatum* is a known colonizer of the nose and skin (especially the face and upper torso). The fact that multiple cultures grew *C. striatum* at initial presentation and at the time of her relapse confirms this organism as the actual pathogen. Successful medical therapy alone has been described. However, our case illustrates that even though *C. striatum* is known for low adhesive properties and low pathogenicity, treatment failure is possible, especially with prosthetic heart valves.

Reflux Does Not Equal Gerd

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A 77-year-old man complained of a 30-year history of chest pain with a negative cardiac evaluation. He described the pain as initially epigastric, then progressing to substernal, usually aching, at its worst radiating to his left arm and jaw and often debilitating. It had worsened over the past 6 years, on average occurring severely 6 to 10 times per month. Triggers included caffeine, spicy foods, and hot beverages. He denied dysphagia. He reported hoarseness, worst in the morning. He had a history of obstructive airway disease, rhinitis, sinusitis, bronchitis, recurrent pneumonia, and a label of "GERD." Prior testing included three EGDs, two 24-hour pH studies and two manometry studies, which were unremarkable. He failed treatment with H 2-blockers, high-dose

proton pump inhibitors, nitrates, and calcium channel blockers (for presumed esophageal spasm) tegaserod and gabapentin. Acetaminophen with codeine was partially alleviating.

After reporting increasing frequency of chest pain, the patient underwent a videofluoroscopic esophagogram. This dynamic study images the oropharynx and the esophagus as the patient swallows liquid, semi-solid and solid boluses of barium. The study demonstrated stasis of barium in the esophagus and reflux of barium from the esophagus into the pharynx, which worsened when the patient was supine. The study did not demonstrate gastroesophageal reflux despite aggressive attempts to elicit it. The stasis and reflux of barium limited to the esophagus and the oropharynx seen in this patient is a phenomenon that has, to date, not been reported in the literature. We have termed and operationally defined these findings as "intraesophageal stasis" (IES), which is esophageal retention of barium or its failure to move distally across the gastroesophageal (GE) junction in a timely manner, "intraesophageal reflux" (IER), which is proximal movement of a static barium column within the esophagus prior to crossing the GE junction, and "supraesophageal reflux" (SER) defined as proximal movement of static barium from the esophagus across the upper esophageal sphincter and into the pharynx.

These findings are a compelling explanation of the pathophysiology for this patient's extra-esophageal symptoms and the lack of response to therapy directed at GERD. IES, IER, and SER are the manifestation of an underlying esophageal motility disorder that appears independent of the traditional disorder of gastroesophageal reflux. Manometry may not be sensitive enough to clearly define this motility disorder. This condition will be seen optimally by the videofluoroscopic esophagogram, a functional study that provides insight into the swallow's pathophysiology by imaging the impact it has on bolus flow.

A Slow Heart

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A conduction abnormality in a patient

with infective endocarditis (IE) represents extension of infection from valve leaflets to surrounding myocardium—perivalvular extension of infection (PVEI). PVEI or an abscess formation is a serious complication associated with higher rates of systemic embolization and fatal outcomes. Extension of infection from the aortic valve is associated with higher conduction abnormalities, including bundle branch block and complete heart block as it overlies the interventricular septum that contains the proximal ventricular conduction system. The mitral valve is in closer proximity to the AV node and hence causes lower degree blocks and supra ventricular arrhythmias.

A 76-year-old woman with MRSA endocarditis of the aortic valve was discharged home on IV Vancomycin with follow-up by the cardiothoracic surgeon and infectious disease consultant. Several days later, her home care nurse found her to be hypotensive and in bradycardia. She was hospitalized through the emergency department. Physical examination was remarkable for mitral and aortic regurgitation murmurs. Admission EKG revealed complete heart block. A transvenous temporary pacemaker was placed and she was admitted to the ICU. A subsequent transesophageal echocardiogram revealed aortic valve vegetation but no abscess. However, during surgery, an annular abscess was noted that burrowed through the sidewall of the aorta and LV outflow tract. She underwent mitral and aortic valve replacement with complete recovery.

This case illustrates the need to consider PVEI in a patient with IE who develops a new conduction abnormality despite being on appropriate antibiotic treatment. Immediate surgical consultation is recommended.

VIGNETTES

A Bewildering Case of Jaundice, Itch, and a Rare Paraneoplastic Syndrome

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A 50-year-old man originally presented to his primary care physician complaining of 1 week of intermittent epigastric

discomfort, steadily worsening fatigue, and pruritus. He was previously healthy. Physical exam showed only scleral icterus and jaundice with no appreciable hepatomegaly. Laboratory studies yielded a total bilirubin of 17.2 mg, ALT of 152 units, and alkaline phosphatase of 436 units. Right upper quadrant ultrasound followed by abdominal CT was normal with no evidence of intra or extra hepatic mass or obstruction. Endoscopic retrograde cholangiopancreatography (ERCP) and endoscopic ultrasound (EUS) were negative. During this work-up his symptoms of pruritus and fatigue progressively worsened. Total bilirubin continued to slowly rise and peaked at 32.6. A liver biopsy was performed and findings were significant for preserved hepatic architecture with moderate intracellular and canalicular cholestasis without evidence for malignancy or active hepatitis. A CT of the chest was obtained to further evaluate a palpable 4x4 cm subcutaneous mass along the right mid-clavicular line. A CT scan of the abdomen was also repeated to evaluate for interval change over the preceding 4 weeks. The abdominal CT was unrevealing; however, the CT scan of the chest demonstrated abnormal soft tissue densities corresponding to left supraclavicular, mediastinal, and left hilar regions. The right lateral chest wall mass was felt to be most consistent with a lipoma. Cardiothoracic surgery subsequently performed a left supraclavicular excision biopsy. Findings were interpreted as Hodgkin lymphoma, nodular sclerosing type. An oncology consultation was made and the patient is currently undergoing therapy.

Approximately 5%-6% of newly diagnosed Hodgkin's disease cases involve the liver, usually from periportal lymph node enlargement or by direct parenchymal infiltration. Extrahepatic Hodgkin's disease with intrahepatic cholestasis is extremely rare with only a handful of case reports published in the literature. The pathogenesis is believed to be a paraneoplastic phenomenon. Treatment of the lymphoma, even with remission, has not always reversed the cholestasis. The best management of these cases has yet to be determined.

Big Cells . . . Big Heart . . . Big Problem

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A 34-year-old man presented with the acute onset of dyspnea, hyperventilation, and orthopnea following a 3-day history of symptoms consistent with a viral syndrome. Past medical history included chronic ulcerative colitis, primary sclerosing cholangitis, and alcohol abuse, but no heart disease. Cardiac risk factors included a 15 pack-year smoking history. There was no family history of premature cardiovascular disease. Vital signs included blood pressure of 89/69 mmHg, heart rate of 130 bpm, and SpO₂ of 95% on 4L O₂ by nasal cannula. Cardiac examination revealed a heart in regular rhythm, but with tachycardia and an S3 gallop. Bibasilar crackles were heard. Chest radiograph showed marked pulmonary vascular congestion and an enlarged heart. Electrocardiogram showed changes consistent with acute anteroseptal infarction. Troponin I was 2.25 ng/ml (>1.5 indicates myocardial injury). Emergent cardiac catheterization revealed normal coronary arteries. On echocardiography, moderate global left ventricular (LV) systolic dysfunction was noted with an ejection fraction (EF) of 31%. Erythrocyte sedimentation rate was 132 mm/hr. All cultures and titers were negative. The patient improved clinically with medical therapy over 4 days, however, on the fifth day he decompensated rapidly. A repeat echocardiogram showed a marked decrease in LV function with an EF less than 10%. A subsequent episode of ventricular tachycardia required defibrillation and endotracheal intubation; the patient was resuscitated, however, he remained unresponsive and died shortly thereafter. Autopsy revealed a dilated heart with no evidence of coronary artery disease. There were diffuse global areas of necrosis and inflammatory infiltrate in the myocardium with numerous multinucleated giant cells. No granulomas were seen. These findings were consistent with dilated cardiomyopathy secondary to giant-cell myocarditis.

Idiopathic giant-cell myocarditis is an uncommon, devastating, frequently fatal

disease that usually affects young, otherwise healthy individuals. It most often presents as congestive heart failure, although ventricular tachyarrhythmias, heart block, sudden death, and symptoms similar to acute myocardial infarction have been reported. Its clinical course is often characterized by progressive congestive heart failure, which is ultimately fatal in all but a few rare cases. Treatment may include immunosuppressive therapy and transplantation. This case demonstrates the fulminant, rapidly progressive nature of this devastating disease.

A Firm Handshake

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Acromegaly is a rare, chronic, debilitating disease that is often diagnosed by the general internist. Most commonly, the syndrome is caused by excessive secretion of growth hormone (GH) by the somatotroph adenoma of the anterior pituitary. Diagnosis is usually delayed for many years, resulting in significant morbidity and mortality.

A 58-year-old white woman who presented to establish primary care was noted to have very large hands on initial introduction. Somatomedin C or insulin-like growth factor-1 (IGF-1) was ordered and found to be almost 5 times the upper limit of normal. An MRI of her pituitary revealed an ectopic tumor in the sphenoid sinus. The patient underwent surgery and pathology confirmed isolated GH producing cells.

In the era of health care reform, the emphasis is on a problem-focused clinical visit. This case illustrates that a rare, debilitating disease can be diagnosed by simply shifting the focus back to the patient. A firm handshake or first impression can still be a valuable clinical tool.

Intravascular Lymphoma

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A 53-year-old man was seen in referral from an outside facility with a 1-month history of fever of undetermined origin, pancytopenia, hyperbilirubinemia, and abdominal distention and pain. His family history was significant in that his mother died of leukemia at age 39 years.

Prior to transfer, he underwent an extensive workup, including bone marrow aspiration and biopsy that was abnormal, but not diagnostic for any specific pathology. In addition, he had undergone placement of a left ureteral stent for obstructive uropathy after a CT scan had shown retroperitoneal (lymph)adenopathy that was apparently causing the urinary obstruction. CT repeated 1 week later showed extensive retroperitoneal adenopathy and the patient was transferred to our facility for further evaluation.

CT scans of the abdomen, pelvis, and chest done on admission to our facility showed significant ascites, pleural effusion, and a moderate degree of right hilar and mediastinal adenopathy in addition to the retroperitoneal adenopathy. Review of prior bone marrow biopsy with additional information from a cytogenetic study showed CD20 or CD79a-positive, abnormal, large B-lymphocytes that confirmed the presence of intravascular large B-cell lymphoma. Chemotherapy was initiated. A CT scan done 2 weeks later showed a significant response with reduction in the adenopathy and ascites. After 3 weeks of chemotherapy, his fever and hyperbilirubinemia resolved and his platelet count normalized.

Intravascular lymphoma is a rare extranodal non-Hodgkin's lymphoma. Fewer than 150 cases have been reported in the English literature. Also known as malignant angioendotheliomatosis and angiotropic large cell lymphoma, it is characterized by proliferation of malignant lymphoid cells within the lumen of small blood vessels. Affected individuals often present with a variety of symptoms related to organ dysfunction secondary to vascular occlusion. Its clinical presentation may include neurologic symptoms, skin lesions, and fever of unknown origin. The diagnosis of intravascular lymphoma requires histologic confirmation, and ante mortem diagnosis is challenging and frequently impossible.

A Nasty Gene Indeed

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A 21-year-old man was brought unre-

sponsive to the emergency department. He was successfully resuscitated from his ventricular fibrillation. He was previously healthy. He had no apparent trauma. His cardiac enzymes were mildly elevated. EKG showed sinus tachycardia, ST segment elevation in V1 and V2, prolonged QT interval and an abnormal right bundle branch block pattern. His urine test was positive for cocaine. Emergency cardiac catheterization found normal coronaries and mild global ventricular dysfunction. Right heart pressures were normal. Despite normal coronaries, his EKG changes persisted. These changes with the sudden cardiac death were consistent with Brugada syndrome. He had no personal or family history of syncope or sudden cardiac death. Cardiac electrophysiologic (EP) study was done, which found no inducible arrhythmias. Given the high risk for recurrent arrhythmias and sudden cardiac death, an ICD was placed and patient was discharged in a stable condition.

The vast majority of cases of sudden cardiac death due to ventricular fibrillation are associated with structural heart disease, particularly coronary heart disease. Sudden cardiac death in the normal heart is an uncommon occurrence, accounting for 5% of cases in an autopsy study of 270 cases. Some causes of sudden cardiac death in patients with normal hearts have been identified. These include Brugada syndrome, which is a genetic disorder with an autosomal dominant inheritance and variable expression. Mutations have been found in the cardiac sodium channel gene, SCN5A. Drugs that block sodium channels in the heart such as cocaine can trigger the arrhythmias. This could explain the relation of cocaine to the Brugada pattern. Studies have showed that the best protective treatment is ICD implantation.

Untreated Brugada syndrome has a high mortality by sudden cardiac death. The typical EKG findings in an asymptomatic (usually younger) patient should trigger a thorough workup and ICD placement to prevent an almost certain death. Given that patients with Brugada syndrome are usually asymptomatic before the sudden cardiac death, most of them can be suspected

by family history and characteristic EKG findings.

Not Your Usual Case of Community-Acquired Pneumonia

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Group A Streptococcus (GAS) is an uncommon etiology of community-acquired pneumonia, accounting for less than 1% of cases since penicillin became widely available. There has been, however, a recent unexplained increase in the incidence of GAS pneumonia. Although outbreaks in institutional settings such as nursing homes and military barracks have been well documented, GAS can also cause severe pneumonia in previously healthy young people.

This is a case of a 45-year-old woman without any significant comorbid cardiopulmonary disease who displayed many clinical features typical of GAS pneumonia. Rapidly progressive hypoxia and hypotension led to a prolonged intensive care unit course, during which mechanical ventilation, vasopressors, and dialysis were required. Also classically exhibited was extensive pleural involvement, which was complicated by abscess and bronchopleural fistula formation.

Pneumonia caused by GAS can be a diagnostic and therapeutic dilemma, and delay in optimal management can lead to its associated high morbidity and mortality. This case illustrates the presentation and prolonged course characteristic of GAS pneumonia.

The Proof of the Pudding is Under the Crust

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A 57-year-old woman with recently diagnosed diabetes mellitus (DM) presented to her primary physician with complaints of bilateral calf pain at rest. Over the course of the next month and a half this pain, originally attributed to diabetic neuropathy, progressed to involve her thighs and caused proximal muscle weakness. She also reported bilateral numbness of the soles of her feet and de-

creased wrist strength. The ensuing laboratory workup demonstrated hyponatremia. Imaging studies, including a chest radiograph and a CT of thorax, demonstrated 2 large pulmonary nodules (2-3 cm), of which 1 was pleural-based and suggested some cavitation.

She was admitted with the suspicion of a primary pulmonary malignancy with paraneoplastic process explaining her neuropathic pain and hyponatremia. Thorough examination upon admission demonstrated a left nasal septal ulceration, a pericardial rub, decreased left grip strength, proximal muscle weakness in the legs, stocking-glove paresthesias, and some livedo reticularis. Despite an original plan of biopsy of her pleural-based nodule, we elected to pursue the nasal ulceration instead. This was non-diagnostic, as was a liver biopsy undertaken because of an alkaline phosphatase level of 5502 units (fractionated to liver). In the meantime, her C-ANCA level was reported at 1:320, with a confirmatory PR3 level of 73 (0-20). Clinically and by laboratory criteria she fit the diagnosis of Wegener's granulomatosis. Accordingly, high-dose prednisone and cyclophosphamide were begun; her paresthesias and weakness dramatically resolved. Her alkaline phosphatase also normalized quickly. Subsequent history taking after admission also revealed her symptoms followed a bout of sinusitis characterized by bloody nasal drainage.

Unusual features of her illness included an impressively high alkaline phosphatase level, and paresthesias as the predominant symptom. She developed no renal impairment during her entire course; her pulmonary symptoms were relatively few. Her early diagnosis allowed us to remit her disease relatively quickly with few residual deficits.

Wegener's granulomatosis is a poorly understood disease characterized by necrotizing granulomata involving small-medium vessels, classically causing a pulmonary-renal syndrome. The natural history of this disease used to tend toward a universally fatal multi-system organ failure course, but with the ability for earlier diagnosis and aggressive immunosuppressive therapy this disease no longer carries such a gloomy prognosis.

Truck Stop Fever

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Ehrlichiosis is an emerging form of tick-borne infectious disease affecting upper Midwestern residents, especially in areas of Minnesota and North-Central Wisconsin. Like other tick-borne infectious diseases, Ehrlichiosis can disseminate and involve many organ systems. This report describes an Ehrlichiosis infection that was disseminated in an almost classic pattern at presentation. It also presents an unusual element of the patient's history that probably amplified the severity of his infection.

A 56-year-old man complained of nausea, vomiting, and diarrhea 3 days prior to admission. The patient, a truck driver who made frequent trips throughout the upper Midwest, was passing through a local town 3 days prior to his admission. He began to feel ill and decided to "ride out" his abdominal symptoms by resting at the local truck stop. He deteriorated over the next 72 hours. In addition to the nausea, vomiting, and diarrhea, he developed dyspnea, fevers, chills, diaphoresis, and oliguria. A waitress serially observed this patient during his 3-day stay. On the third day, she noted increasing distress and called for emergent medical transport to a local hospital. His past medical history included a traumatic fall that resulted in splenic lacerations requiring splenectomy 1 year ago. The admitting physician described a "groggy," ill-kempt patient with rapid, shallow breathing. Vital signs included a pulse of 112 bpm, respiratory rate of 30 bpm, temperature of 39°C, and blood pressure of 187/79 mm Hg. Lung examination showed crackles, more prominently on the right side. Abnormal laboratory values included a white blood cell (WBC) count of 12,100/mm³ with 17% bands, ALT 136, AST 141, and hemoglobin 12.2 g/dL. A patchy right lower lobe infiltrate was noted on chest x-ray. Dual diagnoses of community acquired pneumonia (CAP) and viral gastroenteritis were assigned. He was treated with ceftriaxone and azithromycin for CAP, and rehydration for gastroenteritis. He displayed mild improvement for

2 days but then suddenly became unresponsive and tachypneic on the morning of the third inpatient day, requiring endotracheal intubation. In addition to the respiratory failure, laboratory studies revealed abnormalities in other organ systems, including total bilirubin of 2.1 mg/dL, and creatinine of 1.9 mg/dL. The WBC count increased to 17,000/mm³ with 63% bands. A blood smear indicated unusual inclusions in his granulocytes. A presumptive diagnosis of Ehrlichiosis was made and subsequently confirmed via serology. The patient recovered after a successful course of treatment with doxycycline.

Two Aspirins Won't Help These Headaches

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A 32-year-old African-American woman presented with complaints of severe headache, nausea and photophobia for 2 days. Examination showed marked meningismus, and following a negative head CT scan, she underwent lumbar puncture. The results were consistent with aseptic meningitis. Her past medical history was remarkable for 2 previous episodes of aseptic meningitis. Review of systems did not suggest any specific cause. Given the recurrent nature of this patient's meningitis, additional studies were performed including an ANA, HIV serology, and an RPR. Spinal fluid was sent for fungal, mycobacterial, enteroviral, and HSV cultures as well as for PCR-DNA for HSV. The PCR-DNA for HSV was found to be positive with no HSV isolated in culture. The patient was started on Valacyclovir. She has had no recurrent episodes during almost 1 year of follow-up.

HSV-2 is associated with an aseptic meningitis-like illness that is self-limited and usually does not lead to permanent neurological sequelae. Incidence of this disease is low (0.5%-3% of all aseptic meningitides) but studies suggest that HSV may be responsible for much higher percentage of cases when recurrences have been identified. One study included 13 patients who met criteria for benign recurrent lymphocytic meningitis. Eleven patients had HSV DNA in their CSF specimens. Another study followed 27 patients with first

episode of HSV meningitis, and found that 5 out of 27 had recurrent episodes as confirmed by PCR.

The fact that HSV may be the major causative agent in benign recurrent lymphocytic meningitis raises the possibility that attacks of meningitis may be aborted by treatment and that recurrent attacks might be prevented. In view of this conclusion it seems warranted to strongly consider PCR-DNA testing for HSV in the CSF. Other extraneural manifestations of the disease should also be sought including PCR analysis of genital swabs when attempting to investigate etiology of benign, recurrent, self-limited aseptic meningitis.

When Boop Turns Out to be Myositis

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A 41-year-old woman was referred to our pulmonology department for evaluation of refractory fever, shortness of breath with dry cough, and abnormal

chest x-ray. The patient had a thorough, but unrevealing workup for infectious etiology during the admission at an outside facility. She was treated for atypical pneumonia with 3 different antibiotics prior to presentation with minimal relief of her symptoms.

Physical examination revealed a tired-appearing woman in no acute distress. Lung exam demonstrated bilateral Velcro-type crackles at bases. Neuromuscular exam showed an antalgic gait, no weakness or atrophy, and intact reflexes. Patient had difficulties walking on her toes or heels secondary to generalized fatigue. Definite tenderness was elicited on palpation over quadriceps muscle groups. Skin examination suggested patchy macular erythema over anterior chest without scaling, nail dystrophy, or eyelid rash.

Initial laboratory evaluation revealed leukocytosis, thrombocytosis, and elevations of aldolase, CK, and ESR. Chest x-ray showed bilateral patchy areas of consolidation. CT of the chest revealed ill-defined areas of

consolidation consistent with bronchiolitis obliterans organizing pneumonia (BOOP).

Muscle biopsy from the quadriceps was non-diagnostic. Extensive work-up including bronchoscopy with bronchoalveolar lavage failed to reveal an infectious etiology of the patient's symptoms. Electromyogram (EMG) revealed mild, proximally predominant myopathy. Our operational diagnosis at that point became myositis with multisystem involvement, and the patient was started empirically on prednisone. The patient symptomatically improved within several days after the first dose. Anti-PL7-synthetase antibodies were subsequently identified in the patient's serum.

The clinical picture seen in association with antisynthetase autoantibodies has been referred to as the antisynthetase syndrome. It is a heterogeneous group of connective tissue disorders presenting as polymyositis (PM) or dermatomyositis (DM). Lung involvement and fever are common and often presenting features in these patients.

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