Abstracts of Scientific Papers

Section on Cardiology

*N-Terminal Pro-BNP Levels in Patients with Congestive Heart Failure and Implantable Cardioverter-Defibrillator or Biventricular Pacemaker-Defibrillator Therapies.

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Objectives: B-type natriuretic peptide (BNP) levels have been associated with sudden cardiac death among patients with congestive heart failure (CHF). However, the relationship between BNP levels and arrhythmogenic substrates is poorly understood. We assessed whether there is a correlation between N-terminal pro-BNP levels (ProBNP) and device therapies in patients with CHF and defibrillators (ICD) or biventricular pacemakers-ICD (BiV-ICD).

Methods: ProBNP levels were analyzed in 24 patients (19 men, age 64.2 ± 12 years) with dilated cardiomyopathy (DCM), CHF, and ICD or BiV-ICD. Levels were studied among patients with and without device therapies. In patients with therapies, baseline ProBNP measurements were compared with the closest-to-therapy level. A two-tailed paired *t* test analyzed differences of mean ProBNP plasma levels.

Results: Eighteen patients had ischemic and six nonischemic DCM; left ventricular ejection fraction. 25.1 ± 6.1%. Twelve patients had BiV-ICD and 12 had ICD. Ten patients received therapies during a mean follow-up of 171 days: five appropriate therapies for VT/VF and five inappropriate therapies for atrial tachycardia. No change in the functional class of CHF preceded device therapies. There was no difference between baseline ProBNP levels in patients with therapies versus no therapies (therapies, 1800 ± 1712 pg/mL; no therapies, 2587 ± 2433 pg/mL; *P* value, 0.56). In the group with therapies, closest-to-therapy ProBNP levels drawn within 3 days were higher than baseline levels in the limit of statistical significance (therapies, 3816.2 ± 2842 pg/mL vs baseline, 1860.6 ± 1398 pg/mL; *P* value, 0.05).

Conclusions: In patients with CHF and defibrillation devices, baseline ProBNP levels were not different among patients that received device therapies as compared with patients without therapies. Closest-to-therapy ProBNP levels showed a trend to higher levels as compared with baseline. More severe left ventricular damage and greater hemodynamic derangement may account for higher proBNP levels in patients with device therapies.

**This abstract was one of 25 selected for oral presentation in SMA's Physicians-in-Training Competition.*

*Stress Troponin Radionuclide in Predicting Events Study (Stripes).

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Objectives: Cardiac enzyme elevation and abnormal cardiac perfusion imaging have been shown to be strong predictors of cardiac events. No study to our knowledge was done to evaluate if post-exercise-stress troponin elevation has any prognostic value. This is the first study to address the hypothesis that stress test induced cardiac enzyme elevation could further enhance the predictive value of noninvasive testing.

Methods: Eighty-seven patients previously scheduled for outpatient exercise radionuclide stress testing were enrolled. Cardiac enzyme profiles were obtained immediately before and 18 to 24 hours after exercise stress test. After 6 months, patients were contacted to gather information about cardiac events. Baseline characteristics, enzyme levels, perfusion images, and 6-month event data were statistically analyzed.

Results: Major adverse cardiac events correlated with previously defined predictability of perfusion cardiac imaging. Patients with moderate to severe ischemia on myocardial perfusion scan had no troponin elevation.

Conclusions: Our small study suggests that routine cardiac enzyme evaluation during outpatient stress testing does not improve the predictive nature of radionuclide stress testing and therefore would not be cost-effective. Exercise-induced ischemia was not associated with troponin elevation.

**This abstract was one of 25 selected for oral presentation in SMA's Physicians-in-Training Competition.*

*Hyperlipidemia Management in Patients Undergoing Percutaneous Coronary Intervention: A Comparison of Inpatient Versus Outpatient Population.

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Objectives: To compare the adequacy of hyperlipidemia management in patients who underwent percutaneous coronary intervention as inpatient versus outpatient.

Patients and Methods: We studied the first 60 inpatients and first 60 outpatients undergoing percutaneous coronary intervention after July 1999. Charts were reviewed with respect to lipid management from 6 months before and 6 months after the percutaneous coronary intervention. NCEP guidelines were used to determine the need for or adequacy of treatment. The primary end point was adequate evaluation and treatment of hyperlipidemia during the index PCI admission.

Results: Ninety percent of inpatients versus 50% had lipid profiles done during the index admission ($P = 0.001$); 40% of inpatients vs 60% of outpatients who were checked were found to have elevated cholesterol or LDL levels ($P = 0.07$). Of patients with the hyperlipidemia diagnosed during index admission, 92% of inpatients vs 65% of outpatients had treatment started; 65% of inpatients vs 35% of outpatients had lipid levels mentioned in the discharge instructions.($P = 0.005$).

Conclusions: Patients who underwent PCI as an outpatient received significantly better diagnosis and management of hyperlipidemia as compared with patients who had elective procedures done as an outpatient. These results suggest that a more aggressive ap-

initially treated with topical tacrolimus, as it was possibly *Pyoderma gangrenosum*. That same week, laboratory results from previous skin cultures grew *Nocardia* species; this was confirmed by a new skin biopsy that stained positive for AFB and showed the *Nocardia* organisms. At this point, the patient was initiated on trimethopim sulfamethoxazole, and slow improvement of the lesion was noted.

Concusions: This case illustrates how a skin lesion can be the clear manifestation of an underlying systemic process. At least 60% of *Nocardia* infections are seen in inmunocompromised patients and can appear, as we see in this case, before the diagnosis of the underlying disease.

Transdermal Absorption of Magnesium.

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Background: Magnesium deficiency has been reported in up to 80% of women and 70% of men. In addition, virtually every known disease is associated with magnesium deficiency, including asthma, hypertension, cancer, diabetes, migraine, allergies, myocardial infarction, and depression.

Methods and Results: Oral magnesium is difficult to absorb, and our studies demonstrate that it takes 6 to 12 months for intracellular restoration. Intravenous magnesium chloride can restore intracellular levels within 2 weeks, and maintainance may then be done with oral supplements. Over the past 6 years, we have evaluated several transdermal magnesium preparations and demonstrated that intracellular levels of magnesium can be restored to the normal range within 4 to 6 weeks. An interesting beneficial side effect of the transdermal magnesium chloride is that DHEA levels rise an average of 60% with transdermal magnesium. We have not observed this effect with either intravenous or oral magnesium. Average intracellular magnesium levels and serum DHEA levels in 30 patients who received transdermal magnesium chloride were as follows:

	Before	After	Reference Intracellular
	(mEq/L)	(mEq/L)	(mEq/L)
Magnesium	31.4	41.2	33.9 to 41.9
	(pg/dL)	(pg/dL)	(pg/dL)
DHEA	200	325	150 to 1,200

Despite the laboratory DHEA reference levels, in hundreds of paients with a variety of illnesses, virtually all have been either truly deficient or in the lower two quartiles of the reference range.

Conclusions: Transdermal application of magnesium chloride is a convenient, inexpensive method for restoration of intracellular levels of magnesium, with potential benefit in many illnesses. An added benefit is increased DHEA.

IDD Therapy in Back Pain Treatment: A Clinical Trial Comparing Key Diseases of Low Back Pain.

Carlos Ganuza, MD, Norman Shealy, MD, PhD, FACS, and Nirman Koladia, MD.

Objectives: To evaluate IDD therapy in the management of back pain as well as in key back pain diseases including herniated nucleus pulposus (HNP), spinal canal stenosis (SCS), spondylosis (SPS), and degenerative disc disease (DDD).

Methods: Ninety-nine patients, between the ages of 16 and 80 years, of both genders and all ethnicities, with symptom of back pain for more than 1 week were evaluated. In selecting the patient population, we noted the age, gender, and disease of each patient. The pain outcome instrument we chose to evaluate back pain was the numerical pain scale from 0 to 10.

Results: The patient population had a mean age of 56.98 (SD = 16.37). The number of females was 76 (76.76%) and that of males was 23 (23.23%). Considering a difference of 4 points on the numerical pain scale to be improvement, we obtained 83% (? = 75 to 91%) results for back pain improvement. The result for HNP was 80% (n = 45, ? = 68 to 92%), for SCS the result was 76% (n = 26, ? = 59 to 93%), for SPS the result was 73% (n = 11, ? = 46 to 100%), and for "other" disease including DDD the result was 76% (n = 34, ? = 61 to 91%). ? represents the statistically predicted general population improvement rates, using the *z* statistic, standard deviation, and assuming a normal distribution for back pain improvement. The "other" category included a few patients who had "double" diagnosis from the HNP, SCS, and SPS. The analyses at different improvement cutoffs also correlated well with the cutoff at four points of difference. Different cutoffs we used included 2, 3, and 5 points of difference.

Conclusions: IDD therapy from this trial appears to have obtained extremely beneficial results to the back pain patient and should be considered as an important option for the management of back pain and conditions leading to back pain like HNP, SCS, SPS and other key diseases, especially before the patients are referred to surgery.

Initial Experience with Buprenorphine in Primary Care.

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Background: Thirty patients had requested to be placed on a Buprenorphine regimen. Over the past 6 months, 30 patients were treated with Buprenorphine in the form of Suboxone. Three of the total dropped out AMA, one was incarcerated on an old bench warrant, and one went to a long-term residential program that prohibited Buprenorphine to be administered or taken at that facility.

Methods and Results: Of the remaining 25, 16 males and 9 females, 15 had a history of heroin dependence and 10 prescription drugs. Most often the opioids abused were hydrocodone and ocycontin. There has been an implication that the prescription opioids most often were being prescribed by primary care physicians, and none of the 10 who had become opioid-dependent on hydrocodone and oxycontin were being prescribed these agents by primary care physicians; in most instances, these were being prescribed by "pain clinics." After 6 months, those 25 who were continued on Buprenorphine did well with regard to craving and analgesia on taking 1 to 4 2 mg/0.5 tablet per day. One with severe chronic pain dropped out and decided to be prescribed methadone for analgesia. Of the remaining patients, four for whom 2 mg/0.5 Suboxone was not significant to control their craving, were eventually escalated up to 8 mg Buprenorphine per day, with good control of pain and good control of drug craving.

Conclusions: There still remains a great gap in convincing primary care physicians that they may prescribe this medication for their opioid-dependent patients. There is a misconception on the part of primary care physicians that they must offer the patients counseling themselves. They need to be made aware that they can prescribe the medication but refer the patients for additional care and treatment to recognized agencies within their community. There still remains a limited number of pharmacies who carry Buprenorphine. In many of the chain pharmacies, "corporate headquarters" tells them that they may not stock this medication. When able, physicians