



## Resident Journal Review

This is a continuing column abstracting journal articles pertinent to EM residents. It is not meant to be an extensive review of the articles, nor is it wholly comprehensive of all the literature published. Rather, it is a short list of potentially useful literature that the busy EM resident may have missed. Residents should read the articles themselves to draw their own conclusions. This edition will include articles published over a two month period. These selections are from papers published in November and December 2007.

- David Wallace MD MPH, Daniel Nishijima MD, Christopher Doty MD and Amal Mattu MD

**Sullivan FM, Swan IR, Donnan PT, et al. Early treatment with prednisolone or acyclovir in Bell's palsy. N Engl J Med 2007;357:1598-607.**

This study was a double-blind, placebo-controlled, randomized trial of 551 patients with recent onset Bell's palsy. Patients were assigned to ten days of therapy in four arms: prednisolone, acyclovir, both prednisolone and acyclovir or placebo. The primary outcome of the study was improvement in facial nerve function, using the House-Brackmann score, a standardized clinical grading system for recovery of facial-nerve paralysis. This endpoint was assessed independently by a panel of three experts – an otorhinolaryngologist, a neurologist and a plastic surgeon. Among patients in the prednisolone group, 83% recovered facial function at three months, compared to 64% who did not receive prednisolone. At nine months, the recovery was 94% for prednisolone and 82% for no prednisolone. Acyclovir did not confer a therapeutic advantage at any follow-up time.

This study confirms the generally favorable outcome of patients with Bell's palsy, with 65% recovery of function at three months and 85% at nine months. In addition, the study showed that early treatment with prednisolone for ten days increased the rates of recovery to 83% and 95% respectively. There were no serious adverse events in any treatment group. This safe, effective treatment should be strongly considered by emergency department physicians when caring for patients with unilateral paralysis of the facial nerve.

**Chen L, Kim Y, Santucci KA. Use of ultrasound measurement of the inferior vena cava diameter as an objective tool in the assessment of children with clinical dehydration. Acad Emerg Med 2007;14:841-5.**

The inferior vena cava (IVC) diameter and collapsibility have been studied as indicators of fluid status. Aorta diameter (Ao), on the other hand, shows little variability, even in the setting of intravascular volume depletion.

The ratio of these two measurements was postulated by the authors to represent an objective determination of intravascular volume status in patients that are dehydrated.

This was a prospective observational study of 36 pairs of subjects and controls, aged six months to 16 years old, designed to evaluate the change in this ratio before and after fluid resuscitation. Patients were eligible for enrollment if there was clinical evidence of dehydration requiring intravenous fluids. For each subject, an age, gender and weight matched control was enrolled. Bedside ultrasound measurements of the IVC and Ao were taken before and immediately after infusion of intravenous fluids. The ratio of IVC/Ao was smaller in children clinically assessed to be dehydrated compared to controls. After intravenous fluid administration, the ratio increased.

The accurate assessment of the degree of dehydration in children in the emergency department is challenging. The authors offer that noninvasive measurement of the Ao and IVC is an objective method of determining intravascular depletion and monitoring responsiveness to resuscitation.

**Effectiveness and safety of chest pain assessment to prevent emergency admissions: ESCAPE cluster randomized trial. BMJ 2007;335:659-665.**

Previous studies have shown that low risk patients with undifferentiated chest pain are less likely to be admitted to the hospital from the ED if managed in a chest pain unit. This multicenter UK study looked at whether introducing chest pain units reduces emergency admissions without increasing repeat emergency department (ED) visits and admissions over the next 30 days.

Fourteen hospitals throughout the UK were randomized to either the introduction of a chest pain unit or the continuation of routine care. Patients presenting to the ED with chest pain during the year before and the year after intervention were evaluated for the study. The main outcome measures were the proportion of chest pain ED visits resulting in admission as well as repeat ED visits and admission over the next 30 days.

The study found that there was no change in the proportion of chest pain ED visits resulting in admission (OR 0.998; 95% CI 0.94-1.059) with the introduction of a chest pain unit. Moreover, there were small increases in the proportion of repeat ED visits and admissions in 30 days. Interestingly, the introduction of a chest pain unit was associated with weak evidence of an increase in ED visits with chest pain (16% vs. 3.5%; p=0.08) looking at

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data the year before and after the intervention period. The authors' conclusion is that the implementation of chest pain units does not reduce the proportion of ED patients with chest pain that are admitted.

This is a very large, laborious study that provided data from "whole system" level across a variety of hospitals. The results produced in this study conflict with prior studies showing that chest pain units were associated with decreased admissions with chest pain. These results, however, should not devalue the utility of chest pain units, as the beneficial effects of chest pain units were not measured.

**Pewsnor D, Juni P, Egger M, Battaglia M, Sundstrom J, Bachmann LM. Accuracy of electrocardiography in diagnosis of left ventricular hypertrophy in arterial hypertension: systematic review. BMJ 2007;335:711.**

Among hypertensive patients, left ventricular hypertrophy (LVH) carries an increased risk of cardiovascular death. Accurate diagnosis of LVH is therefore an important component in the care of hypertensive patients and contributes to risk stratification and subsequent management. There are many indices for evaluation of LVH on the surface electrocardiogram (ECG); however, there is debate over their individual accuracies. The authors present a systematic review of observational studies from 1966 to 2005 that evaluated the accuracy of ECG indexes for the diagnosis of LVH. Twenty-one studies were included in their analysis.

No index was found to be superior to the Sokolow-Lyon. (sum of SV1+RV5 or V6>3.5 mV). No index, including Sokolow-Lyon, was sufficiently sensitive to constitute a good screening test for left ventricular hypertrophy among hypertensive patients.

ECGs without positive indices for LVH should not be considered to constitute evidence of normal left ventricular size in hypertensive patients. More research is needed to develop reliable indices of LVH that can be determined from a surface ECG.

*Career Opportunities - continued from page 22*

a fee usually associated with a university), bioterrorism response preparation and even medical forensics.

Finally, there's the "plain" emergency room physician. It's what we all truly envision when we think of a career in EM – working tirelessly in the endless cacophony that is emergency medicine – stabilizing trauma patients, reassuring a child's parents, breaking bad news to an anxious family, setting a fractured arm, treating pneumonia, admitting the elderly patient – all in the first few hours of a shift time. For many of us, this will be our decision – to become the gatekeeper of the hospital.

**Stein D, York G, Boswell S, et al. Accuracy of Computed Tomography (CT) Scan in the Detection of Penetrating Diaphragm Injury. J Trauma 2007;63:538-43.**

Traditionally, diaphragm injuries have been difficult to evaluate without operative intervention. Conventional CT has lacked the sensitivity to be useful for assessment of these injuries; however, the use of newer multidetector row CT (MDCT) is becoming more commonplace in trauma centers. These scanners have improved image resolution and allow for reconstructions in multiple planes. This study was a retrospective review of the admission MDCT in 803 patients with torso trauma.

In this cohort, 57 scans were interpreted as showing a diaphragm injury, 710 were interpreted as negative for a diaphragm injury and 36 were equivocal. Of the 57 MDCT positive patients, 55 were true-positive based on operative reports. A review of the medical records and operative reports of the 710 patients with negative MDCTs, 706 were true-negative. In the group interpreted as equivocal, eight additional patients were determined to have a diaphragm injury.

In this retrospective study, MDCT appeared to be a highly accurate test for identifying diaphragm injuries. Unfortunately, almost half of the cohort was lost in follow-up. Another limitation was that the lack of surgical confirmation of CT findings does not allow for precise determination of true-negatives. While this study suggests some promise for the use of MDCT in the evaluation of diaphragm injuries, there are some serious limitations. Further study with more complete follow-up and a more precise gold standard is needed before this can be considered a reliable test to exclude injury.

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The career options in emergency medicine are diverse. Many EM applicants are motivated, out-of-the-box thinkers who pursue diversity and variety, not only within the practice of medicine on a daily basis, but also longitudinally in the career of medicine. It is not uncommon for a physician to begin in one of the categories which we've discussed and end up in another. That's the beauty of a career in emergency medicine – constant flexibility, guaranteed diversity and endless possibility. Can you imagine doing anything else?