



Resident Journal Review: May-June 2009

David Wallace, MD MPH; Dana Sajed, MD; Christopher Doty, MD and Amal Mattu, MD

This is a continuing column providing 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 January and February 2009.

Campbell CF, Chang AM, Sease KL, et al. Combining thrombolysis in myocardial infarction risk score and clear-cut alternative diagnosis for chest pain risk stratification. Am J Emerg Med 2009;27:37-42.

Identifying emergency department patients with chest pain that can be evaluated in the outpatient setting is challenging. The Thrombolysis in Myocardial Infarction (TIMI) risk score is a stratification tool that predicts 30 day adverse events in a broad range of chest pain populations. Unfortunately, even when this risk score is at its nadir, the adverse event rate is too high for a safe discharge. The investigators postulated that the adverse event rate might be lowered further in patients with a low TIMI score if there was a clear alternative noncardiac explanation for their chest pain.

This prospective cohort study enrolled 3,169 adult chest pain patients who presented to a single emergency department. 991 patients had a noncardiac diagnosis for their chest pain, and 1,808 had a TIMI score of either 0 or 1. Follow-up was conducted to capture the 30 day adverse event rate (death, myocardial infarction or urgent revascularization).

In patients with a TIMI score of 0 and an alternative diagnosis for their chest pain, the 30 day event rate remained nontrivial (2.9%), essentially equivalent to those without an alternative diagnosis (2.0%). Among those with an alternative diagnosis and a TIMI score of 1, the event rate was 5.5%; for those with a TIMI score of 2 the rate was 9.8%. 12 patients (2.7%) had an alternative diagnosis for their chest pain and a TIMI score of 0, yet went on to have myocardial infarction in the next 30 days.

This cohort study tells us that we're not there yet when it comes to identifying the subset of patients who come to the emergency department with chest pain that can be worked-up as outpatients. Local resources will dictate the setting, if not the tempo of the work-up; undoubtedly, there continues to be a role for chest pain units in some of the patients.

Liapikou A, Ferrer M, Polverino E, et al. Severe community-acquired pneumonia: validation of the infectious diseases society of america/american thoracic society guidelines to predict an intensive care unit admission. Clin Infect Dis. Jan 13 2009.

There are several risk stratification tools available for predicting mortality in community-acquired pneumonia (e.g., PSI, CURB, CURB-65). While each score classifies a subset of patients with a high predicted mortality, the instruments were not developed specifically to identify patients with severe disease or guide their disposition (i.e., ward vs. intensive care unit). The most recent ATS/IDSA guidelines support ICU admission for patients in septic shock or with respiratory failure – a practice that is undoubtedly the norm at most hospitals; however, these guidelines also delineate a set of “minor”

criteria that have not been validated.

The authors studied all adult pneumonia admissions at a single hospital over a seven year period to quantify the importance of the minor criteria in the ATS/IDSA guidelines. Patients with major criteria (i.e., intubated and/or on vasopressor infusions) were not included in their main analysis; mortality was compared for patients with different numbers of minor criteria based on whether they were admitted to the ward or an ICU.

Overall, mortality correlated with an increasing number of minor criteria (increasing relative risk of mortality by 1.97 for each successive point). Perhaps surprising, however, for patients with equivalent numbers of minor criteria, admission to the ICU did not confer a survival advantage.

This study is the first to specifically attempt validation of the minor criteria in the ATS/IDSA pneumonia guidelines. While it is not clear that minor criteria alone should be the sole basis for admission to an ICU, this study showed that an increasing number of minor criteria correlated with mortality, and therefore may contribute to the decision for admission to a more closely monitored setting. Further studies are needed to see if the current guidelines can be improved to better guide the use of often-scarce ICU beds.

Kimia AA, Capraro AJ, Hummel D, Johnston P, Harper MB. Utility of lumbar puncture for first simple febrile seizure among children 6 to 18 months of age. Pediatrics. 2009 Jan;123(1):6-12.

An AAP consensus statement released in 1996 on the management of first simple febrile seizures recommends that lumbar puncture (LP) be considered as part of the diagnostic work-up. The authors of this study sought to evaluate the rate of bacterial meningitis in infants between 6 and 18 months of age presenting with simple febrile seizures. In addition, a second endpoint examined was in compliance with the AAP recommendation for LP in children of this age group presenting with first febrile seizures. In this retrospective cohort study, over ten years worth of pediatric patients presenting to a pediatric emergency department were reviewed. 704 cases of febrile seizures in otherwise healthy children were found, of which 260 had lumbar punctures performed. CSF pleocytosis was found in ten cases, and no pathogen was identified on CSF culture. Of the 704 patients, none returned to the study institution with a diagnosis of meningitis.

Of note, greater than 90% of the children in this study had been vaccinated with Haemophilus influenzae type B vaccine and with pneumococcal conjugate vaccine. The authors suggest that in the era of conjugate vaccines, the well appearing febrile child aged 6 to 18 months with first simple febrile seizure is at very low risk for menin-

continued on page 19



Resident Journal Review - continued from page 18

gitis, and therefore, LP is not indicated. As always, clinical judgment should be used in interpreting any study - an ill appearing child with altered mental status, lethargy or other clinical signs suggestive of CNS infection necessitates a complete diagnostic work-up.

Panickar J, Lakhanpaul M, Lambert PC, Kenia P, Stephenson T, Smyth A, Grigg J. Oral prednisolone for preschool children with acute virus-induced wheezing. N Engl J Med. 2009 Jan 22;360(4):329-38.

Oral and inhaled steroids are often used to treat children with wheezing due to viral respiratory tract infections. While evidence favors this therapy in children with asthma or atopy, there has not been any clear proof of benefit in the general pediatric population. This randomized, double-blind, placebo controlled study from the UK looked at 687 children (age range, ten months to five years) who were hospitalized with viral infection-associated wheezing. Patients were all given albuterol then randomized to receive a five day course of once-daily oral prednisolone or placebo. No differences were noted between groups for the primary outcome of time to discharge from the hospital or for the secondary outcomes of number of albuterol administrations, delayed respiratory scores or rates of rehospitalization for wheezing at 30 days. The authors conclude that oral steroids do not have a role in the treatment of preschool children with viral-induced wheezing and no history of asthma or atopy.

Although steroid treatment is frequently used in all children with wheezing, another article in the same issue of the *New England Journal* (Preemptive use of high-dose fluticasone for virus-induced wheezing in young children. Ducharme FM et al. N Engl J Med 2009 Jan 22; 360:339) suggests that high dose inhaled steroids may cause reduced growth in children of this age group. A similar concern is theoretically possible for children with frequent viral infections who are repeatedly placed on oral steroid therapy. As such, it would be advisable to limit exposure to these medications to the population that seems to have the greatest benefit, those with asthma and familial atopy.

Haman L, Parizek P, Vojacek J. Precordial thump efficacy in termination of induced ventricular arrhythmias. Resuscitation. 2009 Jan;80(1):14-6.

The precordial thump is a dramatic maneuver advocated for years as a method for the rapid termination of ventricular tachycardia and ventricular fibrillation. The evidence for this intervention is limited to case reports that show return of spontaneous circulation, primarily in asystolic patients. In this study, the investigators performed a precordial thump on 155 of 485 patients who had a ventricular arrhythmia induced while undergoing an electrophysiological study. The subjects were initially awake and conscious, but became unresponsive after the induction of arrhythmia (mean time 26 seconds). After this span of time, a precordial thump was applied by one of two study cardiologists who estimated the amount of force necessary to be applied with clenched fist from the height of 20–30cm to the junction of the middle and lower third of the patient's sternum. In the meantime, external defibrillators were placed on the patient in case the thump was unsuccessful.

Of these 155 patients, only two had termination of ventricular arrhythmia after precordial thump; both had polymorphic ventricular tachycardia and a good underlying ejection fraction. The authors conclude that this technique has very little utility for the termination of ventricular arrhythmias and that while it is generally safe with few if any harmful complications, the maneuver is not really productive.

What should be taken into consideration is that the patient with pulseless ventricular arrhythmias should receive high quality chest compressions and rapid defibrillation - this should never be delayed for the sake of thumping a patient on the chest.

Dana Sajed is an emergency medicine chief resident at SUNY Downstate/Kings County Hospital.

David Wallace is the emergency medicine/internal medicine (EM/IM) chief resident at SUNY Downstate/Kings County Hospital.

Christopher Doty is the residency program director for emergency medicine and co-director of combined EM/IM at SUNY Downstate/Kings County Hospital.

Amal Mattu is the residency program director for emergency medicine and co-director of combined EM/IM at University of Maryland.

Resident Editor's Letter - continued from page 17

answers a number of questions, though at times I know that I probably evoked even more. I look forward to continued involvement in AAEM/RSA over the next year and working with many of you to further our mission and evaluate the pressing questions that will shape our careers and impact our lives. Please send comments or suggestions to info@aaemrsa.org and make a difference in our specialty and in our profession by getting involved!

1. Hirsch, Stacey. "GM plant a sign of decline: as the carmaker's fortune dip, this week's closing in Baltimore sparks deep concern among workers." Baltimore Sun 9 May.2005, natl. ed. : A1+.
2. Blumenthal, David. "Employer-Sponsored Health Insurance in the United States — Origins and Implications." N Engl J Med. 2006 Jul 6;355(1):82-8.

3. Center for Financing, Access, and Cost Trends, Agency for Healthcare Research and Quality. MEPS HC-064: 2003 P7R3/P8R1 Population Characteristics. Website: <http://www.meps.ahrq.gov/>
4. Center for Financing, Access, and Cost Trends, Agency for Healthcare Research and Quality. Health Insurance Component Analytical Tool (MEPSnet/IC) {online database}. Website: http://www.meps.ahrq.gov/mepsweb/data_stats/MEPSnetIC.jsp. Accessed Aug. 4, 2004.
5. Cascio, Wayne F. Managing Human Resources: Productivity, Quality of Work Life, Profits. New York: McGraw-Hill Higher Education, 2003.