On AMI in Syncopal Patients, Crying Babies, PE in COPD, Pediatric Fatalities with OTC Cough and Cold Medications, and More

NAHUM KOVALSKI, BSc, MDCM

Each month, Dr. Nahum Kovalski reviews a handful of abstracts from, or relevant to, urgent care practices and practitioners. For the full reports, go to the source cited under each title.

Incidence of AMI in Patients with Syncope

***Key point:** In a cohort study of nearly 1,500 patients, the incidence of AMI was 3%, and most patients presented without ST-segment elevation.*

Citation: McDermott D, Quinn JV, Murphy CE. Acute myocardial infarction in patients with syncope. *CJEM*. 2009;11:156-160.

Which patients with syncope require hospital admission? To answer this question, researchers studied the incidence of acute myocardial infarction within 30 days of presentation in a cohort of 1,474 consecutive emergency department patients who presented with syncope or near-syncope (mean age, 62) in California.

Emergency physicians used a structured data form during patient evaluation to classify electrocardiograms as normal or abnormal. ECGs were considered abnormal if they showed rhythm changes or new abnormalities compared with prior ECGs or any abnormalities when no prior study was available. Diagnosis of AMI during 30-day follow-up was assessed by chart review or by contacting the primary physician and the patient.

Of the 95% of patients available for follow-up, nearly all (1,393, or 93%) underwent an ECG as part of their initial evaluation. AMI was diagnosed in 46 patients (3%), of whom 42 (91%) had no ST-segment elevation and nine (20%) had normal initial ECGs. An abnormal initial ECG had a sensitivity of 80% and a specificity of 64% for predicting AMI, with a negative predictive value of 99% and a positive predictive value of 7%.

AMI was rare in this cohort of patients who presented with syncope. Most patients who ultimately were diagnosed with AMI had nondiagnostic ECGs without ST-segment elevation, and some had normal initial ECGs. Until we have better methods to risk-stratify patients with syncope, we should continue to admit patients with new-onset syncope based on our clinical judgment, unless a cardiac cause has been ruled out.

Published in *J Watch Emerg Med*, March 27, 2009—Kristi L. Koenig, MD, FACEP. ■

Nahum Kovalski is an urgent care practitioner and assistant medical director/CIO at Terem Emergency Medical Centers in Jerusalem, Israel.

The Crying Baby: What to Do?

***Key point:** History and physical exam remain the basis for evaluating infants who present with acute, excessive, unexplained crying and for determining which infants require diagnostic testing.*

Citation: Freedman SB, Al-Harthy N, Thull-Freedman J. The crying infant: Diagnostic testing and frequency of serious underlying disease. *Pediatrics*. 2009;123(3):841-848.

Crying is normal in infancy and varies by age, time of day, and from child to child. However, because excessive crying can be a symptom of serious disease, an evidence-based approach to diagnostic evaluation of crying infants would be helpful.

In this study, researchers retrospectively reviewed the charts of 238 consecutive afebrile infants <12 months old (median age,

2.4 months) who presented to a pediatric emergency department (ED) in Toronto with a chief complaint of crying.

Diagnoses that would constitute potentially serious underlying etiologies for crying were determined a priori. The general appearance of 95% of the infants was described as "well."

Two infants <4 months with UTIs had no suggestive history or physical examination findings but were diagnosed by tests obtained in the ED. Only one fluorescein eye examination and eight fecal occult blood tests were conducted; all were negative.

Final diagnoses included crying (27%), viral illness (21%), reflux (13%), colic (6%), and atypical colic (5%). Telephone follow-up performed nine to 18 months after the ED visit in 61% of the study group revealed no subsequently diagnosed serious conditions.

In this large group of generally well-appearing crying infants, history and physical examination findings, either alone or as the driver for diagnostic testing, led to the identification of serious underlying etiologies in 10 of 12 infants. In the remaining two infants, the diagnosis (UTI) was made by testing alone without suggestive history or physical examination findings. The authors recommend that infants who present with a chief complaint of crying during the first few months of life should undergo a urine test, although it might have a very low yield.

Published in *J Watch Ped Adolesc Med*. April 15, 2009—Cornelius W. Van Niel, MD. ■

Consider Pulmonary Embolism in Acute Exacerbations of COPD

Key point: One of four COPD patients who require hospitalization for an acute exacerbation may have PE.

Citation: Rizkallah J, Man SFP, Sin DD. Prevalence of pulmonary embolism in acute exacerbations of COPD: A systemic review and meta-analysis. *Chest*. 2009;135(3):786-793.

There is no clear etiology for nearly 30% of all exacerbations of chronic obstructive pulmonary disease. Although pulmonary embolism (PE) can exacerbate respiratory symptoms such as dyspnea and chest pain, and COPD patients are at a high risk for PE due to a variety of factors, including limited mobility, inflammation, and comorbidities, the prevalence of PE during exacerbations is uncertain.

A systematic review of the literature was performed to determine the reported prevalence of PE in acute exacerbations of COPD in patients who did and did not require hospitalization. Of the 2,407 articles identified, five met the inclusion criteria (n=550 patients).

Overall, the prevalence of PE was 19.9%. Prevalence was higher in patients who were hospitalized than in those who were evaluated in the emergency department (24.7% vs. 3.3%, respectively). Presenting symptoms and signs were similar between patients who did and did not have PE.

One of four COPD patients who require hospitalization for an acute exacerbation may have PE. A diagnosis of PE should be considered in patients with exacerbation severe enough to warrant hospitalization. ■

Pediatric Fatalities Associated with Over-the-Counter (Nonprescription) Cough and Cold Medications

Key point: Pediatric fatalities caused by nonprescription cough and cold medications were uncommon, involved overdose, and primarily affected children younger than 2 years.

Citation: Dart RC, Paul IM, Bond GR, et al. *Ann Emerg Med*. 2009;53(4):411-417.

Fatalities that involved a child <12 years of age and mentioned a cough and cold ingredient were obtained from five sources. An independent panel of eight experts (pediatrics, pediatric critical care, pediatric toxicology, clinical toxicology, forensic toxicology, forensic pathology) used explicit definitions to assess the causal relationship between medication ingestion and death.

Of 189 cases included, 118 were judged possibly, likely, or definitely related to a cough and cold ingredient. Of these 118 cases, 103 involved a nonprescription drug, whereas 15 cases involved a prescription medication alone.

Of the 103 cases associated with nonprescription drugs, the evidence indicated that 88 involved an overdosage. Dosage could not be assessed in the remaining 15 cases.

Several contributing factors were identified: age <2 years, use of the medication for sedation, use in a daycare setting, use of two medicines with the same ingredient, failure to use a measuring device, product misidentification, and use of a nonprescription product intended for adult use. All cases that occurred in a daycare setting involved a child <2 years.

Occult Bacteremia in the Postpneumococcal Vaccine Era: No More Blood Cultures

Key point: In a study of some 8,000 previously healthy, young febrile children with no apparent source of infection, the rate of true-positive blood cultures was only 0.25%.

Citation: Wilkinson M, Bulloch B, Smith M. Prevalence of occult bacteremia in children aged 3 to 36 months presenting to the emergency department with fever in the postpneumococcal conjugate vaccine era. *Acad Emerg Med*. 2009: Mar; 16:220-225.

For decades, the work-up of febrile young children included blood cultures to rule out occult bacteremia. This study assessed the usefulness of this practice in the era of routine childhood immunization with pneumococcal vaccine.

Researchers retrospectively reviewed the charts of 8,408 previously healthy children (age range, 3 months to 36 months)

who presented to a pediatric emergency department in Phoenix between 2004 and 2007 with fever ≥39°C, no apparent source of infection, blood cultures drawn, and who were discharged from the ED.

A pediatric infectious disease specialist determined that 21 blood cultures were true positives (0.25%); of these, 14 grew *Streptococcus pneumoniae*. Another 159 positive cultures (1.89%) were determined to be contaminants, yielding a ratio of 7.6 contaminants for every one true positive culture.

Routine vaccination for *Haemophilus influenzae* and pneumococcus has virtually eradicated occult bacteremia in well-appearing febrile children, and the results of this study suggest that blood cultures should no longer be performed in such patients. The complete blood count also is of questionable usefulness in this patient cohort and should not be ordered. Ill-appearing children, whether febrile or not, still warrant an appropriately directed work-up, which might include blood cultures.

Published in *J Watch Emerg Med,* April 17, 2009—Diane M. Birnbaumer, MD, FACEP. ■

The Management of Children with Gastroenteritis and Dehydration in the Emergency Department

Key point: The most useful predictors of >5% dehydration are abnormal capillary refill, abnormal skin turgor, and abnormal respiratory pattern.

Citation: Colletti JE, Brown KM, Sharieff GQ, et al. *J Emerg Med*. 2009;Apr 2 [e-pub ahead of print].

No single laboratory value has been found to be accurate in predicting the degree of dehydration and this is not routinely recommended. However, evidence suggests that the three most useful predictors of ≥5% dehydration are abnormal capillary refill, abnormal skin turgor, and abnormal respiratory pattern.

Several studies found that low serum bicarbonate combined with certain clinical parameters predicts dehydration.

In most studies, oral or nasogastric rehydration with an oral rehydration solution was equally efficacious as intravenous rehydration.

Many experts discourage the routine use of antiemetics in young children. However, children receiving ondensetron are less likely to vomit, have greater oral intake, and are less likely to be treated by IV rehydration. Mean length of emergency department stay is also less, and very few serious side effects have been reported.

Treatment for Children with Viral-Induced Wheeze

Key point: For children with no history of atopy and no family history of asthma, treatment with oral steroids or inhaled corticosteroids is not warranted.

Citation: Bauchner H. *Medscape Today*. March 20, 2009. Available at: *www.medscape.com/viewarticle/587826*.

Children with viral-induced wheeze often receive oral or inhaled corticosteroids or a leukotriene inhibitor despite a lack of good evidence that they work. Three studies shed light on this condition.

In a double-blind, randomized trial, 220 children (age range, 1–5 years) who had histories of intermittent wheeze associated with respiratory tract infection received albuterol plus a seven-day course of inhaled budesonide (1000 mcg twice daily), montelukast (4000 mcg daily), or placebo at the onset of each RTI. The three groups had similar proportions of episode-free days during 12 months of treatment (the primary outcome, about 75%), oral steroid use, and healthcare utilization.

However, during the 14 days after initiation of the study drug, children who received inhaled budesonide or montelukast had significant reductions in total symptom scores (reflecting wheeze, cough, and activity level). Children who were considered at high risk for asthma at baseline received the greatest benefit from the study medications.

In another double-blind, randomized, 12-month trial, 127 children (age range, 1-6 years) with histories suggestive of viral-induced wheeze received high-dose fluticasone (750 mcg twice daily) or placebo at the onset of each RTI and continued until 48 hours after they were symptom free.

If symptoms worsened, parents administered two to four inhalations of albuterol (100 mcg). Children whose symptoms lasted more than 10 days received medical consultation. Rescue oral steroids were required in significantly more episodes of RTI in the placebo group than in the fluticasone group (18% vs. 8%), and fluticasone-treated children had significantly shorter symptom duration (about one to two days). However, fluticasone recipients gained significantly less weight (mean, 1.53 kg vs. 2.17 kg) and height (mean, 6.23 cm vs. 6.56 cm) than placebo recipients.

In a third randomized trial, 687 children (age range, 10 months–5 years) who were hospitalized in three U.K. hospitals with viral infection-associated wheezing and did not respond to albuterol received a five-day course of once-daily oral prednisolone or placebo. No differences between groups emerged for the primary outcome of time to discharge from the hospital or for the secondary outcomes of number of albuterol administrations during hospitalization and respiratory scores at four, 12, and 24 hours.

Where does this leave us for treatment of children with viral-induced wheezing? For children who have no history of atopy and no family history of asthma, treatment with oral steroids or inhaled corticosteroids is not warranted. However, for children who seem to be at risk for asthma (by virtue of positive family history or atopy), either medium-dose inhaled corticosteroids or a leukotriene inhibitor might be warranted during an RTI. ■