



ABSTRACTS IN URGENT CARE

- Hope for Avoiding Head CT Radiation Exposure
- Imaging in Blunt Chest Trauma Injuries
- Post I&D Antibiotics for Small Abscesses
- Managing Pain in Corneal Abrasions

■ SEAN M. MCNEELEY, MD and GLENN HARNETT, MD

Each month the College of Urgent Care Medicine (CUCM) provides a handful of abstracts from or related to urgent care practices or practitioners. Sean M. McNeeley, MD and Glenn Harnett, MD lead this effort.

Finding New Pathways that Protect Head Injury Patients

Key point: Using an EEG-based biomarker in adult patients has potential benefit.

Citation: Hanley D, Pritchep LS, Bazarian J, et al. Emergency department triage of traumatic head injury using a brain electrical activity biomarker: a multisite prospective observational validation trial. *Acad Emerg Med.* 2017;24(5):617-627.

Prior studies estimate that traumatic head injury (TBI) accounts for over 2.5 million ED visits annually in the U.S., also revealing that ED visits for TBI have increased 29% from 2006 to 2010—a time when overall ED visits increased by <4%. This is presumably due to increased public awareness of concussions. Not included are an estimated 1.6 to 3.8 million patients annually who sustain sports-related TBI and do not seek emergency medical care. The vast majority (estimated to be as high as 90%) of head CTs performed on mild TBI (mTBI) patients are negative for clinically important brain injury. This observational, prospective, multisite validation trial published in *Academic Emergency Medicine* included 720 adult patients (age 18-85) admitted to the ED within 3 days

of sustaining a closed head injury. Ninety-seven percent of trial participants had a Glasgow Coma Scale score of 15. Using a handheld BrainScope One device (FDA cleared as the Ahead 300) and disposable headset at the point of care, 5-10 minutes of electroencephalogram (EEG) from frontal and frontotemporal regions was acquired. An a priori-derived EEG-based classification algorithm (based on brain electrical activity developed from a large independent population) was applied prospectively to this validation population in order to predict whether or not the portable device would be highly accurate in detecting the likelihood of the patient having a brain injury visible on an adjudicated CT scan (CT+). Using a ternary classification output (likely CT+, equivocal, likely CT-), sensitivity of the device for detection of any traumatic brain injury visible on CT was 97.4% with an NPV of 98.2% and specificity of 38.7%. In contrast, the specificity of the New Orleans Criteria when applied to this population was only 8.6%. When the ternary classification was applied only to those patients with >1 mL of visible blood on CT (where risk related to false negatives is highest), the sensitivity increased to 98.6%. This low false negative rate, combined with specificity significantly higher than common clinical decision rules of the device, could allow for care pathways for mTBI patients that reduce the risks of head CT radiation exposure and allow for screening of mTBI patients in the urgent care setting. Further studies are planned in the pediatric population. ■



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Assessing Imaging Options in Blunt Chest Trauma

Key point: Plain films may miss 2/3 of rib fractures.

Citation: Murphy CE 4th, Raja AS, Baumann BM, et al. Rib

fracture diagnosis in the panscan era. *Ann Emerg Med.* [Epub ahead of print May 27, 2017]

This brief trauma/research report in the *Annals of Emergency Medicine* prospectively compared 8,661 patients who had both a chest radiograph and chest CT after undergoing blunt trauma and presentation to 10 Level I trauma centers. The results revealed that 66.1% of rib fractures were identified on the CT chest only, not on the comparison chest radiograph. Patients with identified rib fractures had higher admission rates (88% vs 46%) and mortality (5.6% vs 2.7%) than patients without rib fracture. They also showed that patients with first or second rib fractures had higher mortality (7.4% vs 4.1%) and incidence of great vessel injury (2.8% vs 0.6%) than those patients with fractures of ribs 3-12. The authors did point out that isolated rib fracture does not add to mortality risk, and the incremental value of diagnosing minor thoracic injuries by chest CT remains unclear. ■

A Look at Outpatient Treatment of Skin Abscesses, Post I&D

Key point: *Adding antibiotic after drainage may speed healing.*
Citation: Daum RS, Miller LG, Immergluck L, et al. **A placebo-controlled trial of antibiotics for smaller skin abscesses. *N Engl J Med.* 2017;376(26):2545-2555.**

This multicenter, prospective, double-blind trial enrolled 786 adult and pediatric participants with skin abscess ≤ 5 cm in an outpatient setting. After abscess I&D, participants were randomly assigned to receive either clindamycin, TMP-SMX, or placebo for 10 days. The primary outcome was clinical cure 7-10 days after the end of treatment. Lack of clinical cure was defined as no resolution of signs or symptoms, inability to continue study drug due to adverse events within the first 48 hours, recurrence at the original site of infection, occurrence of a skin infection at a new body site, unplanned surgical intervention of the skin infection, or hospitalization related to the infection. Of note, abscess fluid was submitted for culture and MRSA was isolated from 50% of the participants. The clinical cure rate was essentially the same between the clindamycin and TMP-SMX (83% vs 82%) groups. The cure rate in both active groups was higher than those participants who received placebo following I&D (69%). This difference was statistically significant ($P < .001$ for both comparisons). A new lesion at a different body site or the use of a rescue medication were more common causes of treatment failure in the placebo group than in either treatment group. These findings indicate a clinical benefit for antibiotic therapy in addition to I&D alone in patients, particularly those with *S aureus* infection. This calls into question the perception (largely based on expert opinion or smaller, underpowered, and lower quality noninferiority trials) that clinical cure rates for skin abscesses do not improve with the addition of systemic antibiotics following I&D. ■

*“There appears to be a clinical benefit for antibiotic therapy in addition to I&D, particularly in patients with *S aureus* infection. This calls into question the perception that cure rates for skin abscesses do not improve with the addition of systemic antibiotics following I&D.”*

Can We Help Diminish Pain from Corneal Abrasions?

Key point: *Reconsider longer tetracaine use.*
Citation: Waldman N, Winrow B, Densie I, et al. **An observational study to determine whether routinely sending patients home with a 24-hour supply of topical tetracaine from the emergency department for simple corneal abrasion pain is potentially safe. *Ann Emerg Med.* [Epub ahead of print May 2, 2017]**

The traditional approach to management of pain in corneal abrasions has been to administer topical anesthetic drops at the time of presentation and discharge patients with oral analgesics for pain control. Continued use of tetracaine postdischarge has been discouraged by traditional teaching due to concerns for masking the signs of potential corneal toxicity. The study published in the *Annals of Emergency Medicine* was conducted in an emergency department where a policy change allowed providers to prescribe 1% tetracaine drops for 24 hours to treat the pain associated with corneal abrasions. Outcomes (serious complications or uncommon adverse events) were compared to patients who did not receive tetracaine treatment. The study revealed no adverse events in the treatment group (0/459), which could be attributed to tetracaine. The results indicate that the limited use of tetracaine for pain control of simple corneal abrasions may be acceptable, but the authors caution that larger prospective studies are required to confirm its safety in a larger population. ■