ABSTRACTS IN URGENT CARE

- Supplemental O2 for MI
- Football and CTE
- Oral Corticosteroids and Lower RTIs
- Gabapentinoids in Chronic Low Back Pain
- New Tests for Flu
- Impact of AEDs on Survival
- New Drug for BV

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. Glenn Harnett, MD leads this effort.

Supplemental Oxygen May Not Reduce All-Cause Mortality in MI Patients

Key point: Routine use of supplemental oxygen in patients with suspected myocardial infarction who did not have hypoxemia was not found to reduce 1-year all-cause mortality.

Citation: Hofmann R, James SK, Jernberg T, et al. Oxygen therapy in suspected acute myocardial infarction. *N Engl J Med*. August 28, 2017. [Epub ahead of publication]

The rationale behind oxygen therapy is to increase oxygen delivery to the ischemic myocardium and thereby limit infarct size and subsequent complications. However, the basis for this practice is limited to experimental laboratory data and small clinical studies. This registry-based randomized control trial enrolled 6,629 patients (gathered from nationwide Swedish registries) with suspected myocardial infarction who had an oxygen saturation of ≥90% and randomized them to receive either supplemental oxygen or ambient air. At the time of randomization, the median oxygen saturation was 97%. The primary endpoint of death from any cause within 1 year after randomization occurred in 5% of patients assigned to oxygen and in 5.1% of patients assigned to ambient air. The difference was not statistically significant. Rehospitalization with myocardial infarction within 1 year occurred in 3.8% assigned to oxygen and in 3.3% assigned to ambient air. This difference was also not statistically significant. Hypoxemia developed in 1.9% in the oxygen group, compared with 7.7% in the ambient-air group. The median of the highest troponin level during hospitalization was 946.5 ng/L in the oxygen group and 983 ng/L in the ambient-air group. This also was not a statistically significant difference. These results show that the routine use of supplemental oxygen in patients with suspected myocardial infarction (who do not have hypoxemia) does not reduce 1-year all-cause mortality or readmission rates for myocardial infarction. ■

Glenn Harnett, MD is principal of the No Resistance Consulting Group in Mountain Brook, AL; a board member of the College of Urgent Care Medicine and the Urgent Care Foundation; and sits on the *JUCM* editorial board.

Brain Study Suggests a Link Between CTE and Football—Even Among Youths

Key point: A high proportion of deceased players of American football showed pathological evidence of chronic traumatic encephalopathy, suggesting that CTE may be related to prior participation in football.

Citation: Mez J, Daneshvar DH, Kiernan PT, et al. Clinicopathological evaluation of chronic traumatic encephalopathy in players of American football. *JAMA*. 2017;318(4):360–370.

This widely referenced *JAMA* study presents a convenience sample of 202 deceased players of American football from a brain bank established to study the neuropathological sequelae of repetitive traumatic brain injury. Their brains were neuropathologically examined and diagnoses of neurodegenerative diseases, including chronic traumatic encephalopathy (CTE), were determined based on defined diagnostic criteria. Retrospective telephone clinical assessments (including head trauma history, informant-reported athletic history and, for players who died in 2014 or later, clinical presentation, including behavior, mood, and

cognitive symptoms and dementia) with informants were also performed. Among the 202 players studied (median age at death, 66 years), CTE was neuropathologically diagnosed in 177 (87%; mean years of football participation, 15). This included 0 of 2 pre-high school, 3 of 14 high school (21%), 48 of 53 college (91%), 9 of 14 semiprofessional (64%), 7 of 8 Canadian Football League (88%), and 110 of 111 National Football League (99%) players. Like the incidence rates above, the neuropathological severity of CTE rose along with a higher level of play. All three former high school players had mild pathology, while the majority of former college (56%), semiprofessional (56%), and professional (86%) players had severe pathology. The rates of behavioral or mood symptoms reported were similar among both the mild and severe groups. Cognitive symptoms were higher in the severe pathology group (95%) than the mild pathology group (85%). Rates of dementia were markedly higher in the severe pathology group (85%) as compared to the mild pathology group (33%). The key shortcoming of this study, acknowledged by its authors, is the likely potential selection bias that players and their relatives may have submitted their brains due to clinical symptoms of CTE, noticed while they were living. Because of that, one cannot draw any inferences about the exact likelihood that a football player will develop CTE. Still, these were not incidental findings. Most of the athletes manifested severe signs of mental illness, fully one-third of the patients displayed suicidality (ideation, attempts, or completion), and more than a quarter of the patients with mild CTE in this series committed suicide. At the very least, these results suggest that people who play advanced levels of football are at risk for CTE.

New Data Question Oral Corticosteroids for Lower RTIs

Key point: Oral corticosteroids should not be used for acute lower respiratory tract infection symptoms in adults without asthma because they do not reduce symptom duration or severity.

Citation: Hay AD, Little P, Harnden A, et al. Effect of oral prednisolone on symptom duration and severity in nonasthmatic adults with acute lower respiratory tract infection: A randomized clinical trial. *JAMA*. 2017;318(8):721-730.

This multicenter, placebo-controlled, randomized trial was conducted in 54 family practices in England among 401 adults with acute cough and at least one other with lower respiratory tract symptom who did not require immediate antibiotic treatment and had no history of chronic pulmonary disease or use of asthma medication in the past 5 years. The intervention was either two 20 mg prednisolone tablets (n=199) or matched placebo (n=202) once daily for 5 days. The primary outcomes were duration of moderately bad or worsening cough and mean severity of symptoms on days 2 to 4. Treatment with oral prednisolone, 40 mg/d for 5 days, compared with placebo did not significantly reduce the median duration of moderately bad or worse cough (5 days in each group) or the mean severity of symptoms between days 2 and 4 (1.99 vs 2.16 points out of 6). No significant treatment effects were observed for duration or severity of other acute lower respiratory tract infection symptoms, duration of abnormal peak flow, antibiotic use, or nonserious adverse events. These findings do not support the use of oral steroids for the treatment of acute lower respiratory tract infection in the absence of asthma. ■

New Data on Gabapentinoids in Chronic Low Back Pain

Key point: Existing evidence on the use of gabapentinoids in chronic low back pain is limited and demonstrates significant risk of adverse effects without any demonstrated benefit.

Citation: Shanthanna H, Gillon I, Rajarathinam M, et al. Benefits and safety of gabapentinoids in chronic low back pain: a systematic review and meta-analysis of randomized controlled trials. *PLoS Med.* 2017;14(8):e1002369.

This was a systemic review and meta-analysis of randomized controlled trials on the benefits and safety of gabapentinoids in chronic low back pain (CLBP). Pregabalin and gabapentin are gabapentinoids that have demonstrated benefit in neuropathic pain conditions. Despite no clear rationale, they are increasingly used for nonspecific CLBP. The authors included eight randomized control trials reporting the use of gabapentinoids for the treatment of CLBP of >3 months duration in adult patients. Three studies compared gabapentin with placebo and showed minimal improvement of pain. Three studies compared pregabalin with other types of analgesics which showed greater improvement in the other analgesic group. The largest study using pregabalin as an adjuvant to tapentadol showed no pain improvement with the addition of pregabalin. The following adverse events were more commonly reported with gabapentin: dizziness (RR = 1.99); fatigue (RR = 1.85); difficulties with mentation (RR = 3.34); and visual disturbances (RR = 5.72). The number needed to harm with 95% CI for dizziness, fatigue, difficulties with mentation, and visual disturbances were 7, 8, 6, and 6 respectively. Functional and emotional improvements were reported by few studies and showed no significant improvements. These results suggest caution in the use of gabapentinoids in CLBP, as there is limited evidence of efficacy and adverse events are relatively common. ■

New Tests May Be More Highly Sensitive for Flu

Key point: Newer, novel digital immunoassays and rapid nucleic acid amplification tests had markedly higher sensitivities for influenza A and B in both children and adults than did traditional rapid influenza diagnostic tests, with equally high specificities.

Citation: Merckx J, Wali R, Schiller I, et al. Diagnostic accuracy

of novel and traditional rapid tests for influenza infection compared with reverse transcriptase polymerase chain reaction: a systematic review and meta-analysis. *Ann Intern Med*. 2017;19(167):394-409.

The authors did a meta-analysis of 162 published studies and compared commercialized rapid tests (ie, those providing results in <30 minutes) of 130 older rapid influenza diagnostic tests (RIDTs), 19 digital immunoassays (DIAs), and 13 newer rapid nucleic acid amplification tests (NAATs) to compare their sensitivity and specificity for influenza A and B. Reverse transcriptase polymerase chain reaction was the reference standard for influenza diagnosis. DIAs differ from older rapid tests by using instrument-based digital scanning of the test strips. Rapid NAATs are simplified reverse transcriptase polymerase chain reaction (RT-PCR)–based tests. Pooled sensitivities for detecting influenza A were 54% for RIDTs, 80% for DIAs, and 92% for NAATs. Those for detecting influenza B were 53% for RIDTs, 77% for DIAs, and 95% for NAATs. Pooled specificities were uniformly high (>98%) for all tests. An editorialist called for "revision of guidelines to encourage use of these newer diagnostic strategies." Rapid NAATs and DIAs are still considerably more expensive than other, older tests and their point-of-care utility still needs confirmation. However, if the costs of these newer DIAs and NAATs can be brought down to encourage use, their increased sensitivity provides the potential to rationally increase the use of antivirals and decrease the use of antibiotics in the urgent care setting. ■

AEDs Improve Intact Survival in Some Cardiac Arrests

Key point: Since Rochester, MN began distributing automatic external defibrillators (AEDs) to police and firefighters in the 1990s there has been an improving trend in neurologically intact survival of ventricular fibrillation/pulseless ventricular tachycardia (VF/pVT) out-of-hospital cardiac arrests.

Citation: Okubo M, Atkinson EJ, Hess EP, White RD. Improving trend in ventricular fibrillation/pulseless ventricular tachycardia out-of-hospital cardiac arrest in Rochester Minnesota: a 26-year observational study from 1991 to 2016. *Resuscitation*. 2017;120:31-37.

In 2009–2016, neurologically intact survival to discharge from overall VF/pVT and bystander-witnessed VF/pVT increased to 54% and 65%, respectively, compared with 39% and 43% in 1991–1997. Using multivariable analysis, survival significantly increased in 2009–2016 among all VF/pVT arrests (adjusted OR, 3.10) and bystander-witnessed VF/pVT (adjusted OR, 4.28), compared with those in 1991–1997. Comparing the earliest period (1991–1997) to the latest (2009–2016), survival to hospital admission changed (from 70% to 73%), and mean call-to-shock time increased (from 6.5 to 7.7 minutes). The rate of bystander CPR increased (from 48% to 57%), as did the rate of first shock provided by first responders (police or firefighters), from 44% to 69%. Use of targeted temperature management also increased from 0% to 44% after being initiated in 2005. Neurologically intact survival increased among patients with shockable rhythms, from 40% to 54%, and among those with bystander-witnessed arrest, from 43% to 65%. These increases were both statistically significant. These neurologically intact survival rates support the continued use and greater adoption of AEDs, along with increasing the percentage of first responders trained to use them. ■

A New Option for Bacterial Vaginosis

Key point: The Food and Drug Administration has approved a new antibiotic for women with bacterial vaginosis.

Citation: Schwebke JR, Morgan FG Jr, Koltun W, Nyirjesy P. A phase 3, double-blind, placebo-controlled study of the effectiveness and safety of single oral doses of secnidazole 2 g for the treatment of women with bacterial vaginosis. *Am J Obstet Gynecol*. September 1, 2017. [Epub ahead of print]

This phase 3, randomized, double-blind, dose-ranging, placebo-controlled, multicenter study evaluated a single 2 g dose of oral secnidazole (Solosec) and placebo for the treatment of bacterial vaginosis (BV). In the trial, 189 women with BV who met all Amsel criteria (ie, characteristic discharge; pH ≥4.7; ≥20% clue cells; positive whiff test) were randomized 2:1 at 21 U.S. centers to 1 or 2 g secnidazole compared with placebo. The primary endpoint was the proportion of clinical outcome responders (normalization of discharge, amine odor, and clue cells) 21–30 days after treatment. Secondary endpoints included clinical cure rates (normalization of discharge, amine odor and clue cells) assessed 7–14 days after treatment and test of cure 21–30 days after treatment. Clinical cure rates based on the 2016 FDA guidance of 7–14 days after treatment were 64% for 2 g secnidazole compared with 26.4% for placebo. Significantly more patients receiving single-dose secnidazole 2 g compared with placebo required no additional BV treatment (68% vs 29.6%). The overall adverse event rate was 34.4% for single-dose secnidazole 2 g vs 21.9% for placebo. Vulvovaginal candidiasis was the most common adverse event. A dose of secnidazole comes in the form of a 2 g packet of granules. Patients sprinkle the granules on applesauce, yogurt, or pudding and eat the mixture within 30 minutes without chewing or crunching the granules. Most current antibiotics for bacterial vaginosis must be taken for 5 to 7 days, and often more than once a day. As a single-dose treatment, secnidazole has the potential to improve adherence and the likelihood of a cure for BV. ■