



ABSTRACTS IN URGENT CARE

- Acetaminophen vs Ibuprofen in Children
- Optimizing Podcasts for Learning
- Dosing Ketorolac IV in Renal Colic
- Torus Distal Radius Fractures
- Avulsion Fractures of the Fifth Metatarsal Base

■ IVAN KOAY, MBChB, FRNZCUC, MD

- COVID-19 and ECGs
- Long-Term Sequelae of COVID-19
- COVID-19, Zinc, and Vitamin C

Use of Acetaminophen and Ibuprofen for Fever and Pain in Young Children

Take-home point: Acetaminophen and ibuprofen are both safe for short-term treatment of pain and fever in children under 2 years of age. Ibuprofen produces more rapid pain and fever relief than acetaminophen.

Citation: Tan E, Braithwaite I, McKinlay C, et al. Comparison of acetaminophen (paracetamol) with ibuprofen for treatment of fever or pain in children younger than 2 years: a systematic review and meta-analysis. *JAMA Netw Open.* 2020;3(10):e2022398.

Relevance: Urgent care providers commonly are faced with treating pain and fever in infants and toddlers. Prior reviews of this topic have focused on older children.

Study summary: This was a systematic review of 19 studies available prior to March 2019. The authors found ibuprofen more effective than acetaminophen in ability to reduce fever and treat pain from 4 to 24 hours after administration. The superiority of ibuprofen over acetaminophen for both pain and fever treatment did not persist beyond 24 hours.

There were low rates of adverse events reported in all studies, with most studies showing no adverse outcomes within 28 days of reporting. The authors concluded that there remains insufficient evidence to justify use of ibuprofen in infants <6 months.

Limitation: Most studies included were low- to moderate-quality evidence. ■

Retention of Knowledge from Listening to Podcasts

Take-home point: Embedded questions within podcasts help listeners retain information.

Citation: Weinstock M, Pallaci M, Alluisio A, et al. Effect of interpolated questions on podcast knowledge acquisition and retention: a double-blind, multicenter, randomized controlled trial. *Ann Emerg Med.* 2020;76(3):353-361.

Relevance: The ability to understand how we can best retain material from podcasts will enable a more robust educational experience.

Study summary: This was a randomized, double-blind, multicenter study evaluating the knowledge acquisition and retention of emergency medicine (EM) residents listening to podcasts in three residency programs in Ohio. The authors found that participants listening to podcasts with questions interpolated within the material retained the material better than those who listened to podcasts without such questions. This knowledge retention persisted in the subsequent 2–3 weeks after listening to the podcast. Retention was strongest for information emphasized by the interpolated questions, but not the other material covered in the podcast.

Limitation: The study has not investigated whether the retained knowledge would be transferrable to clinical practice in participants. ■

Intravenous Ketorolac Dosing in Renal Colic

Take-home point: 10 mg of intravenous ketorolac seems



Ivan Koay, MBChB, FRNZCUC, MD is an urgent care physician based in Dublin, Ireland, as well as an Examiner and Trainee Supervisor for the Royal New Zealand College of Urgent Care Education Faculty for the Urgent Care Medicine Fellowship, Royal College of Surgeons Ireland.

equally efficacious when compared with 20 mg and 30 mg for patients with renal colic.

Citation: Eidinejad L, Bahreini M, Ahmadi A, et al. Comparison of intravenous ketorolac at three doses for treating renal colic in the emergency department: a non-inferiority randomized controlled trial. *Acad Emerg Med*. December 28, 2020. [Epub ahead of print]

Relevance: Ketorolac, the most widely used NSAID analgesic, has multiple serious known adverse effects. Therefore, a better understanding of the minimum effective dose is important for patient safety.

Study summary: This was a prospective, randomized noninferiority trial comparing the IV administration of ketorolac at doses of 10 mg, 20 mg, and 30 mg for the treatment of pain associated with renal colic in 165 patients at three EDs in Iran. The authors assessed for change in pain at 30 minutes post administration of ketorolac. There was no statistical difference in the improvement in pain or duration of pain relief. The most common side effect was nausea and vomiting. This occurred, somewhat surprisingly, with equal frequency across the groups. Headache was the next most common acute adverse reaction and occurred most frequently at doses of 30 mg.

Limitation: The recruitment of patients was done based on the availability of the investigators, potentially introducing selection bias. The study was conducted in Iran, which may affect generalizability. ■

Treatment of Torus Distal Radius Fractures

Take-home point: Torus fractures of the distal radius can be treated safely with removable splints.

Citation: Perry D, Gibson P, Roland D, et al. What level of immobilisation is necessary for treatment of Torus (buckle) fractures of the distal radius in children? *BMJ*. 2021;372:m4862.

Relevance: Torus fractures are common in children. Full immobilization, previously the standard of care, carries with it risk of discomfort and potentially unnecessary activity restriction.

Study summary: This is a systematic review evaluating present evidence and uncertainties in the treatment of Torus fractures of the distal radius in children. Presently recognized methods for treating Torus fractures described in the literature include casting, rigid splint, bandaging, and no immobilization. There is controversy as to which is the superior method of treatment, with no present consensus. Comparison of treatment methods in the available publications showed no difference in pain,

function, or adverse events on follow-up. There is also no consensus as to whether any follow-up is required for these injuries. The authors suggest local groups collaborate to form protocols for managing these injuries. They also caution that it is important that Torus fractures be appropriately distinguished from other types of fractures. Currently, the NICE guidelines are most widely used; they advocate for removable splints and immediate discharge.

Limitation: The authors note that the quality of data available is poor and that there is a lack of blinding in the studies reviewed. ■

Treatment of Avulsion Fractures of the Fifth Metatarsal Base

Take-home point: A hard-soled shoe appears to be sufficient for treatment of avulsion fractures of the fifth metatarsal base.

Citation: Choi RC, Kim BS, Kim YM, et al. Hard-soled shoe versus short leg cast for a fifth metatarsal base avulsion fracture—a multicenter, noninferiority, randomized controlled trial. *J Bone Joint Surg Am*. 2021;103(1):23-29.

Relevance: The ability to treat avulsion fractures of the fifth metatarsal base with less restrictive strategies compared with full immobilization reduces the risk for complications such as ankle joint stiffness and DVT.

Study summary: This was a prospective, randomized controlled, multicenter noninferiority study that included patients from six university hospitals in South Korea. The 96 patients in this study were allocated randomly to a hard-soled shoe or short leg cast group. The hard-soled shoe group was permitted to remove the shoe at night or to wash their feet. Both groups were allowed to weight bear as tolerated and to use crutches. The authors found that the hard-soled shoe treatment was noninferior to the short leg cast. Patients in the hard-soled shoe group also had a significantly shorter time to return to preinjury activities with equal patient satisfaction in both groups. There were three cases of non-union among all subjects: one in the hard-soled shoe group and two in the short leg cast group

Limitation: Patient selection in the study was affected by the policy of informing patients that short leg casting was standard treatment, which could lead to selection bias. Critically, use of the hard-soled shoe in this study was reserved for fifth metatarsal avulsion fractures; more distal fractures of the fifth metatarsal were not evaluated. ■



COVID-19 Abstracts

COVID-19 ECG Rhythms

Take-home point: Sinus tachycardia is the most common ECG abnormality in patients with COVID-19. Presence of RV strain pattern should raise concern for pulmonary embolism (PE).

Citation: Long B, Brady WJ, Bridwell R, et al. Electrocardiographic manifestations of COVID-19. *Am J Emerg Med.* 2021; 41:96-103.

Study summary: This was a literature review of 80 studies addressing the ECG findings associated with COVID-19. Sinus tachycardia was the most common rhythm encountered in critically ill patients, followed by atrial fibrillation. Both were independent predictors of illness severity, myocardial injury, and poor outcomes. Ventricular tachycardia (VT) and ventricular fibrillation (VF), which is a known complication of myocarditis, occurred in 1% to 6% of patients. These dysrhythmias may be precipitated due to a number of factors, including use of medications that affect the QT interval, electrolyte abnormalities, and myocardial inflammation. Patients with elevated troponin were noted to have higher incidence of VT than those without. Bradycardias and atrioventricular (AV) blocks were less common in patients with COVID-19. PE was a common finding in COVID-19 patients when right ventricular heart strain pattern was.

Limitation: This review article included only studies in English and studies published early in the course of the pandemic. ■

How Long Is 'Long-Term' for COVID-19 Sequelae in Adults?

Take-home point: Thirty percent of patients continue to report persistent symptoms at 9 months after being diagnosed with COVID-19. Older patients were more likely to have persistent symptoms.

Citation: Logue J, Franko N, McCulloch D, et al. Sequelae in adults at 6 months after COVID-19 infection. *JAMA Netw Open.* 2021;4(2):e210830.

Relevance: Understanding the long-term sequelae of COVID-19 infection is vital for counseling patients and defining the broader public health consequences of the pandemic.

Study summary: This was a longitudinal prospective cohort of 177 adults with laboratory-confirmed COVID-19 infection enrolled at the University of Washington. Participants with COVID-19 were contacted to complete a single follow-up questionnaire between 3 and 9 months after illness onset. Among the respondents at the time of the initial diagnosis, 9% required

hospitalization, 6% were asymptomatic, and 85% had mild illness treated in an outpatient setting.

The authors found that persistent symptoms were reported in 26% of patients aged 18-39 years, 30% aged 40-64 years, and 43% aged 65 years and older. The most common persistent symptoms noted by participants were fatigue (13%), loss of sense of smell or taste (13%), and brain fog (2.3%).

Limitation: The study was single-centered and had a small number of participants with a relatively large proportion lost to follow up. ■

Use of Zinc and Vitamin C in COVID-19 Infection

Take-home point: High-dose zinc, vitamin C, or a combination of both does not reduce the length or severity of COVID-19 infection.

Citation: Thomas S, Patel D, Bittle B, et al. Effect of high-dose zinc and ascorbic acid supplementation vs usual care on symptom length and reduction among ambulatory patients with SARS-CoV-2 infection—The COVID A to Z Randomized Clinical Trial. *JAMA Netw Open.* 2021;4(2): e210369.

Relevance: Patients commonly take or inquire about supplements which may alter their risk for COVID-19. Zinc and vitamin C are among the most common supplements patients take in an effort to affect immune function.

Study summary: This was a randomized open-labeled trial within a single healthcare system in Ohio and Florida across multiple hospital sites. Patients were randomized equally to one of four treatment strategies over a period of 10 days after a positive COVID-19 viral test. The four treatment strategies were: 1) 8,000 mg of vitamin C (to be divided into two to three doses per day with meals); 2) 50 mg of zinc gluconate at bedtime; 3) both therapies; and 4) usual care (ie, no supplements). The intended recruitment target was 520 patients; however, the trial was terminated early after recruitment of 214 (40%) of the target due to futility criteria met at the interim analysis point. The authors found that there was no significant difference among groups in the primary outcome, which was number of days required to reach a 50% reduction in symptoms. There was also no significant difference in the number of days to reach resolution of symptoms, and no difference in hospitalization and death rates in all the groups.

Limitation: This was a relatively small, single-center study. Optimal dosing of the supplements has not been established and the doses studied may not reflect a dose required for clinical effect. ■