ABSTRACTS IN URGENT CARE

- Vapocoolant and Digital Nerve Blocks
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Vapocoolant for Pain Reduction in Digital Nerve Blocks

Take-home point: Application of vapocoolant prior to digital nerve blocking can reduce pain associated with skin puncture and local anesthetic infiltration.

Citation: Selvi F, Bedel C, Akçimen M. Evaluation of vapocoolant spray effect on pain reduction during digital nerve block: a randomized clinical trial. *Am J Emerg Med*. 2021;50: 260–263.

Relevance: Patients commonly experience significant pain with digital nerve blocks. Reducing the pain of this procedure is important for patient tolerance and satisfaction.

Study summary: This was a Turkish ED-based prospective, randomized clinical study designed to evaluate the effectiveness of a vapocoolant spray for reducing pain during digital block. One hundred fifty patients were randomized into 2 groups: vapocoolant spray treatment or placebo (non-spray treatment). Post procedure, patients rated their pain from the procedure using a 10 cm visual analogue scale (VAS).

The authors found VAS pain score during skin penetration and during anesthetic infiltration was significantly lower in the spray group compared to the placebo group ($p < 0.001$). The VAS pain score during infiltration was also significantly lower in spray groups than in the control group ($p < 0.001$).

Editor's comments: Because of the obvious sensation of cooling with vapocoolant use, subjects could not be blinded to the treatment arm they were randomized to. This study reinforces the results of a study covered in the September 2021 abstracts in *JUCM*, showing lower pain when ice was applied to the injection site prior to digital nerve block. There's little downside or risk to employing a simple technique such as this to reduce the considerable and common pain experience many patients have with digital blocks. ■

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One vs Two Doses of Dexamethasone in Mild-to-Moderate Pediatric Asthma Exacerbation

Take-home point: Single dose of dexamethasone was not inferior to two doses for the treatment of acute asthma exacerbations in children presenting to ED.

Citation: Martin M, Penque M, Wrotniak B, et al. Single-dose dexamethasone is not inferior to 2 doses in mild to moderate pediatric asthma exacerbations in the emergency department. *Pediatr Emerg Care*. 20221;38(6):e1285-e1290.

Relevance: Treatment of mild-to-moderate asthma with single-dose dexamethasone is convenient because adherence is guaranteed if the dose can be directly observed. The efficacy of this approach when compared with multiple doses of steroids has been a subject of debate.

Study summary: This was a single-site, prospective, parallel-group, unblinded randomized clinical trial of pediatric patients with known history of asthma presenting with mild-to-moderate exacerbations presenting to an ED in Buffalo, NY. Block randomization was used to assign patients with a 1:1 ratio of allocation to the single-dose group or the two-dose group. Each group was given 0.6 mg/kg (maximum of 16 mg) of dexamethasone orally in the ED and the second group also received a prescription for a similar second dose administered 24 hours later. An unblinded research assistant contacted all patients on the sixth day after their ED visit for follow-up.

The study randomized 308 patients. The authors found no statistically significant difference for any of the postdischarge outcomes between the two groups, including days until symptom resolution, number of school days missed, adverse events, and vomiting after discharge. Results remained unchanged after adjusting for age. Patients with mild asthma had an average 2.7 days until symptom resolution while those with moderate asthma had an average 2.5 days to symptom resolution. ED return rates were 13.5% in the mild group and 7.7% in the moderate group.

Editor's comments: This study was unblinded with no placebo control used. Earlier studies comparing dexamethasone with prednisone in the treatment of asthma lacked consistent dosing of dexamethasone, which this study addresses. This study used higher maximum doses of dexamethasone (up to 16 mg) than what is common practice. Interestingly and surprisingly, there was a reverse correlation between asthma severity and ED return rates, which warrants further study. ■

Reducing Clean-Catch Urine Contamination in Infants

Take-home point: Using chlorhexidine as a skin cleaning agent prior to obtaining clean-catch urine (CCU) in infants is safe and feasible; however, this study design does not address its efficacy directly.

Citation: Gursanscky J, Klim S, Krieser D, et al. Chlorhexidine skin cleaning to reduce clean-catch urine contamination in infants: a pilot study. *Emerg Med Australas*. 2022;34:282–284.

Relevance: Eliminating contamination when collecting urine for testing in infants improves our ability to identify urinary infections in young children, especially as many urgent care centers do not have the equipment or staff to collect catheterized specimens. Catheterization can also be traumatic for both parents and children, and worth avoiding if a less invasive method for obtaining a sterile specimen exists.

Study summary: This was a prospective pilot study using a convenience sample of precontinent children 1 to 24 months of age in whom a CCU was ordered. Patients had their perigenital skin area cleaned with 0.1% chlorhexidine gauze for 10 seconds by the treating nurse or doctor. Contaminated urine samples were defined as growth of two or more organisms at $\geq 10^6$ CFU/L. Positive cultures were defined as growth of a single organism at $>10^8$ CFU/L. Secondary outcomes were parent and clinician satisfaction with the method used.

The authors collected 54 urine samples for analysis. They found 22% contamination within those samples and 24% positive cultures. Positive culture microbes included *E coli* and *Klebsiella* sp. Satisfaction with the cleaning intervention was high among both parents and clinicians at 48%. No parents or clinicians were unsatisfied or very unsatisfied with the intervention.

"Probiotics seem to be safe and well tolerated so coprescribing as a general practice seems like a reasonable strategy for most children, particularly if prescribing longer course and/or broad-spectrum antibiotics."

Editor's comments: There was no placebo used as comparative measures to the study; therefore, it's unclear to what extent the chlorhexidine may have reduced the risk of a contaminated specimen. This study had a small sample size due to constraints of COVID-19; however, use of chlorhexidine wipes prior to CCU was well tolerated and appreciated by parents and clinicians. This technique warrants further study as it may be the simple and long sought-after solution to the perennial problem of getting a reliable urine specimen in young children. ■

Probiotics for Prevention of Antibiotic-Associated Diarrhea in Children

Take-home point: Multispecies probiotics reduced the overall risk of antibiotic-associated diarrhea (AAD) during antibiotic treatment and during the week after completion of antibiotics in pediatric patients.

Citation: Lukasik J, Dierikx T, Besseling-van der Vaart I, et al. Multispecies probiotic for the prevention of antibiotic-associated diarrhea in children: a randomized clinical trial. *JAMA Pediatr*. Epub ahead of print June 21, 2022.

Relevance: AAD is a common side effect related to virtually all antibiotics. Determining safe means to reduce the occurrence and severity of AAD is important for minimizing iatrogenesis and improving compliance.

Study summary: This was a parallel-group, randomized, quadruple-blind placebo-controlled RCT conducted in pediatric clinical and outpatient wards in three hospitals in the Netherlands and two in Poland. Patients were recruited within 24 hours following initiation of broad-spectrum oral and intravenous antibiotic treatment. Subjects were randomized in a 1:1 ratio to receive probiotics or placebo for the duration of antibiotic treatment and for 7 days after, up to a maximum of 17 days. Outcome measures were AAD, defined as three or more loose or watery stools in a 24-hour period caused either by *C difficile* or an otherwise unexplained etiology.

Three hundred fifty participants (202 Polish and 148 Dutch) were recruited. The authors found 83 patients who developed

"Safe, widely available, and effective oral antiviral treatment options are important to identify in order to minimize the health impacts of the ongoing SARS-CoV-2 pandemic."

diarrhea overall (23.7%). Patients in the probiotic group had a significantly lower risk for developing diarrhea than those in the placebo group when analyzed regardless of its etiology (20.9% vs 32.3%, respectively) with a relative risk of 0.65 (95% CI, 0.44-0.94). The number needed-to-treat (NNT) therefore was nine to prevent one case of AAD. Patients receiving probiotics were also significantly less likely to require intravenous rehydration owing to diarrhea (0% vs 3.2, NNT=32; P=0.03).

Editor's comments: The authors changed the definition of AAD during the analysis stage of the study, which introduces statistical bias into the findings. A significant number of patients were lost to follow-up in both arms of the study. Overall, probiotics seem to be safe and well tolerated so coprescribing as a general practice seems like a reasonable strategy for most children, particularly if prescribing longer course and/or broad-spectrum antibiotics. ■

Nonantibiotic Treatment of Mild Acute Diverticulitis

Take-home point: Nonantibiotic outpatient treatment of mild diverticulitis was safe and noninferior to current standard treatment with antibiotics

Citation: Mora-Lopez L, Ruiz-Edo N, Estrada-Ferrer O, et al. Efficacy and safety of nonantibiotic outpatient treatment in mild acute diverticulitis (DINAMO-study): a multicentre, randomised, open-label, noninferiority trial. *Ann Surg*. 2021;274(5): e435-e442.

Relevance: Being judicious in the use of antibiotics is important for minimizing unnecessary side effects and bacterial resistance.

Study summary: This was a multicenter, prospective, open-label noninferiority, randomized controlled trial with an intention-to-treat approach and parallel assignment, performed in 15 colorectal surgery units at acute-care secondary and tertiary hospitals throughout Catalonia (Spain). Diverticulitis was diagnosed with abdominal CT scan. Patients were randomized in a 1:1 ratio to receiving either symptomatic treatment with 600 mg of ibuprofen every 8 hours alternating with 1 g of acetaminophen every 8 hours or amoxicillin/clavulanate 875/125 mg every 8 hours.

The authors randomized 480 patients (242 patients in the non-antibiotic group and 238 in the antibiotic group). They found a revisit and admission rate of 5.8% in the antibiotic group and 3.3% in the non-antibiotic group. No patients in either group needed emergency surgery during the study period.

Editor's comments: Diverticulitis was diagnosed via CT in the study protocol, which limits its generalizability to most urgent care centers. Half of patients presenting with AD in the study period were excluded due to the strict selection criteria, which also may limit the study's generalizability. Nontreatment with antibiotics has been examined in prior research and has been found to be safe in mild cases of diverticulitis; however, it is not widely accepted as standard practice. Therefore, nontreatment with antibiotics, at present, should be reserved for cases in which both the patient and the follow-up clinician are in agreement with this approach. ■

Treatment of Torus Wrist Fractures in Children

Take-home point: Outcomes for pediatric torus fractures of the distal radius treated with a soft bandage wrap were equivalent to patients treated with rigid immobilization.

Citation: Perry D, Achten J, Knight R, et al. Immobilisation of torus fractures of the wrist in children (FORCE): a randomised controlled equivalence trial in the UK. *Lancet*. 2022;400(10345): 39-47.

Relevance: There is growing evidence that rigid immobilization may not be necessary for the treatment of a number of nondisplaced fractures in children. Casting has a number of consequences for both patients and parents and should be reserved for cases where there is clear benefit to full immobilization.

Study summary: This was a multicenter, randomized control equivalence trial conducted in 23 emergency departments within the United Kingdom. Investigators enrolled children between 4 and 15 years of age who had a radiologically confirmed torus fracture of the distal radius and randomly assigned them in a 1:1 ratio to a bandage (ie, gauze roll) group or rigid splint and cast immobilization group.

Nine hundred sixty-five patients were enrolled. The primary outcome was pain at 3 days postinjury. The authors found equivalence between the two treatments. There was no significant difference between the bandage group and rigid immobilization group at any subsequent re-evaluations. At day 1, parents in the rigid immobilization group were more satisfied than parents in the bandage group; however, this difference was not present at 6-week review and there was no evidence of any significant differences in patient self-reported function.

Editor's comments: Strong parental preference for rigid immobilization led to a high exclusion rate from nonconsent for

enrollment in the study. This approach of nonimmobilization is not the accepted standard of care for radial torus fractures in most regions. Caution is advised about employing this approach unless doing so with both parental and orthopedic approval. ■

COVID-19 Abstracts

Efficacy of Paxlovid in Reducing Severe COVID-19 and Mortality

Take-home point: Paxlovid (nirmatrelvir/ritonavir) was highly effective in reducing the risk of severe COVID-19 or mortality among this patient population infected with recent viral strains.

Citation: Najjar-Debbiny R, Gronich R, Weber G, et al. Effectiveness of Paxlovid in reducing severe COVID-19 and mortality in high-risk patients. *Clin Infect Dis*. 2022;ciac443.

Relevance: COVID-19 remains a significant source of morbidity and mortality. Safe, widely available, and effective oral antiviral treatment options are important to identify in order to minimize the health impacts of the ongoing SARS-CoV-2 pandemic.

Study summary: This retrospective cohort study used the computerized databases of Clalit Health Services (CHS) and the Israeli Ministry of Health (MOH) to identify all adults with a first-ever positive test for SARS-CoV-2 (PCR or antigen test) who were started on nirmatrelvir/ritonavir within 5 days of the positive test. Patients were included into the study irrespective of their vaccination status.

The authors found 4,737 patients who met inclusion criteria. Nirmatrelvir/ritonavir was independently associated with a significantly decreased risk for the composite outcome of severe COVID-19 (ie, hospitalization) or death (HR = 0.54; 95% CI, 0.39-0.75). Adequate COVID-19 vaccination status was also associated with significantly decreased risk for the composite endpoint of severe COVID-19 or mortality (HR 0.20; 95% CI, 0.17-0.22). Multivariate analysis suggested nirmatrelvir/ritonavir was more effective in older patients and patients with cardiovascular disease, neurological disease, or immunocompromise.

Editor's comments: Nirmatrelvir/ritonavir continues to show promise in reducing risk of severe COVID-19 and death, especially in older patients with comorbidities. This study did not address adverse reactions to nirmatrelvir/ritonavir; however, its current use is predominantly limited due to extensive drug-drug interactions. ■