AAP Journals BLOG

Towards Lessening Neonatal Pain

April 25, 2017

This randomized controlled trial of 40 newborn infants in a level III neonatal intensive care unit (NICU) in India found that use of a lancet, compared to a 26-gauge needle, to collect heelstick blood for glucose monitoring was associated with less pain by some measurements. However, some minor study design and reporting issues lessen the impact of the results

Dr. Bud Wiedermann, MD, MA, Evidence eMended Editor, Grand Rounds

Article type: AAP Grand Rounds Blog

Here's another study attempting to guide us towards improving newborns' comfort with medical procedures, this time looking at the type of device used to collect blood during heelstick.

Source: Britto C, Jasmine, P N Rao S. (published online ahead of print January 21, 2017). J Trop Pediatr. doi:10.1093/tropej/fmw093. See **AAP Grand Rounds commentary by Dr. Mike Dubik** (subscription required).

This randomized controlled trial of 40 newborn infants in a level III neonatal intensive care unit (NICU) in India found that use of a lancet, compared to a 26-gauge needle, to collect heelstick blood for glucose monitoring was associated with less pain by some measurements. However, some minor study design and reporting issues lessen the impact of the results.

A level III NICU, assuming that terminology is the same in India as in the US, would include neonates requiring mechanical ventilation. However, newborns in this study needed to be within the first 48 hours of NICU admission, hemodynamically stable, and without ventilatory support, neurologic or other major abnormalities, and not exposed to drugs likely to alter pain cessation within the previous 5 days. Thus, these sound like the most stable of "sick" neonates, likely to qualify for level II NICU care. I was disappointed that the authors didn't give us more detailed information about the study population, beyond birth weight and gestational age (average 35 weeks here), to include at least chronologic age and underlying diagnoses. Also, given that the indication for blood draw was concern for hypoglycemia, I would like to know how many of the infants were actually hypoglycemic, since I think that might affect their pain score testing. Lack of all this information limits the generalizability of the study results, because a clinician won't know how the study patients compare to his/her own patient population.

The authors list as a study limitation the fact that the investigator rating the degree of pain (by scoring videotapes of the newborns' faces during the procedures with a standard pain scoring tool) was not blinded as to what device was being used. They do mention that a co-investigator, who was blinded to the allocation, also scored the recordings, and that the non-blinded investigator viewed the recordings again 3 months later. Those results, available in supplementary online details, suggested no significant differences in the ratings. So, I'm not so concerned about that particular study limitation.

This is a minor point, but I found a bit of sloppiness in the reporting/editing of the article. In both the abstract and the Material and Methods section, the authors state that all subjects received 2 mL of expressed breast milk (EBM*) prior to the procedure, building on their **prior report** that this approach was superior to 25% dextrose in mitigating pain with procedures. However, in the discussion section, they stated that all the

infants received 5 mL of EBM. Given that their prior work utilized the 2 mL volume, I suspect that is the true amount used in the current study. Sloppy reporting/editing always makes me worry about what else might be sloppy about the study.

It's difficult to judge pain perception in anyone, much less a newborn infant. I applaud the authors for their attempts to decrease pain in newborns, and I hope that future studies of this phenomenon will include more subjects and allow for more precise determinations of pain mitigation in this very fragile patient population.

*Some years ago, one of my students in an Evidence-Based Medicine course gave me a hand-made T-shirt with the phrase, "Got Bud, Got EBM." (It was a take-off on a milk commercial popular at the time.) It was too nice to wear, so I framed it and proudly display it in my office. A few years ago, when I was interviewing an infectious disease fellowship applicant in my office, she asked me what my interest in expressed breast milk was all about. So much for acronyms!

- Facebook