THE MINIMALLY EFFECTIVE DOSE OF SUCROSE FOR PROCEDURAL PAIN IN NEONATES

Bonnie Stevens, RN, PhD, FAAN
University of Toronto; The Hospital for Sick Children

INTRODUCTION / AIM

Sucrose effectively reduces pain in neonates undergoing single painful medical procedures. However, effect size varies across studies and the minimum effective dose has not been identified.

To determine the minimally effective dose of sucrose for neonates hospitalized in neonatal intensive care units (NICUs), undergoing heel lance for diagnostic purposes.

METHODS

A randomized controlled trial was conducted from July 2013 - April 2015 at 4 Canadian tertiary level NICUs. Infants delivered between 24 and 42 weeks GA, and not receiving concurrent opioid analgesia within 24 hours of a painful procedure were eligible to participate. Infants were randomized, using a computer generated program, to receive: i) 0.1mL (Group 1), i) 0.5mL (Group 2) or iii) 1.0mL (Group 3) of 24% sucrose. The research nurse administered the sucrose commencing 2 minutes prior to the painful procedure. The primary outcome, pain intensity, was measured at 30 and 60 seconds following the heel lance using the Premature Infant Pain Profile - Revised (PIPP-R). Severity of illness was determined using the SNAPPE-II. ANCOVA models adjusting for GA were used to examine between group differences in pain intensity and severity of illness scores.

RESULTS

245 infants (n=82, n=81, n=82 in Groups 1, 2, 3 respectively) were randomized. No significant differences in the 30 or 60 second PIPP-R scores between groups after adjusting for GA (p=0.9) were reported.

DISCUSSION / CONCLUSIONS

0.1mL appears to be the minimally effective dose of 24% sucrose required to effectively lower pain response in neonates undergoing heel lance.

OTHER AUTHORS

Janet Yamada
Marsha Campbell-Yeo
Denise Harrison
Sharyn Gibbins
Carol McNair
Anna Taddio
Shirine Riahi