

Routine sucrose analgesia during the first week of life in neonates younger than 31 weeks' postconceptional age.

[Pediatrics](#). 2002 Sep;110(3):523-8.

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Abstract

OBJECTIVE:

To determine the efficacy of sucrose analgesia for procedural pain during the first week of life in preterm neonates in neonatal intensive care units on enhancing later clinical outcomes.

METHODS:

A total of 107 preterm neonates who were born at <31 weeks' postconceptional age (PCA) entered this double-blind, randomized, controlled trial within 48 hours of birth at 3 level III university-affiliated neonatal intensive care units in Canada, and 103 completed the study. Sucrose (0.1 mL of 24%) or sterile water was administered orally up to 3 times, 2 minutes apart, for every invasive procedure during a 7-day period. Motor development and vigor, and alertness and orientation components of the Neurobehavioral Assessment of the Preterm Infant were measured at 32, 36, and 40 weeks' PCA; Score for Neonatal Acute Physiology was measured on the last day of intervention; and Neuro-Biological Risk Score (NBRS) was measured at 2 weeks of age and at discharge. Primary analyses of covariance were applied for each outcome to compare group differences followed by secondary analyses using standard linear regression within each group to determine predictors of outcomes.

RESULTS:

Although there were no differences between the groups on any outcomes, there were significant dose-related effects within each group. In the sucrose group only, higher number of doses of sucrose predicted lower scores on motor development and vigor, and alertness and orientation at 36 weeks', lower motor development and vigor at 40 weeks', and higher NBRS at 2 weeks' postnatal age. Higher number of invasive procedures was predictive of higher NBRS both times in the water group.

CONCLUSIONS:

Repeated use of sucrose analgesia in infants <31 weeks' PCA may put infants at risk for poorer neurobehavioral development and physiologic outcomes. Additional study is needed to determine the most appropriate age and duration of sucrose analgesia in preterm infants.

PMID: 12205254