To test the hypothesis that oral administration of 24% sucrose associated with nonnutritive sucking in healthy newborns receiving venipuncture beyond the first week of life controls pain and pain-related variation in heart rate (HR) and noninvasive oxygen saturation (SpO2)” De Bernardo et al (2019).

Abstract:

OBJECTIVE: To test the hypothesis that oral administration of 24% sucrose associated with nonnutritive sucking in healthy newborns receiving venipuncture beyond the first week of life controls pain and pain-related variation in heart rate (HR) and noninvasive oxygen saturation (SpO2).

METHODS: A total of 66 term newborns were enrolled between February and September 2017 in the Neonatology Department of AORN Santobono-Pausilipon, Naples. They were randomly assigned to receive oral 1 mL 24% sucrose (treated group, n=33; gestational age 38.53±1.49 weeks; body weight 3,035±55 g; age 22.40±6.82 weeks) or oral 1 mL 10% glucose (control group, n=33; gestational age 38.91±1.45 weeks; body weight 3,203±65 g; age 23.36±7.02 weeks) 1 minute before and during venipuncture. Evaluations were carried out between 8 and 9 am in all newborns. The Neonatal Infant Pain Scale (NIPS) was used to assess pain in newborns. Outcome measurements (HR, SpO2) were obtained before (T0), during (T1), and 1 minute after (T2) venipuncture using a Nellcor bedside SpO2 patient-monitoring system. NIPS scores were recorded throughout the procedure. Statistical analysis was performed using SPSS version 20.0. Changes in HR and SpO2 were assessed by mixed ANOVA for repeated measures. NIPS scores were evaluated by Mann-Whitney U test.

RESULTS: There were no statistically significant differences in HR or SpO2 between TG and CG at T0. HR was significantly lower in TG than CG at both T1 and T2 (P<0.05), whereas SpO2 was significantly higher in TG than CG at both T1 and T2 (P<0.05). NIPS scores were significantly lower in TG (median 0) than CG (median 6) during the entire procedure (P<0.05). CONCLUSION: Oral administration of 24% sucrose associated with nonnutritive sucking prior to and during a painful procedure has a strong impact on pain response in term newborns, reducing NIPS scores and influencing pain-associated variations in HR and SpO2. Complete analgesia during painful procedures in term newborns might prevent pain reactivity and its behavioral and neurodevelopmental consequences. Replication of this study is needed before widespread application of findings.

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