Is oral dextrose gel a viable strategy in the prevention and treatment of hypoglycemia in at-risk infants?

EVIDENCE-BASED ANSWER

Prophylactic use of oral dextrose gel in at-risk newborns reduces the risk of hypoglycemia compared with placebo with a number needed to treat (NNT) of 10 (SOR: **B,** single high-quality randomized clinical trial [RCT]). Treatment of hypoglycemic newborns with oral dextrose gel reduces the risk of persistent hypoglycemia with a NNT of nine compared with placebo (SOR: **B**, single high-quality RCT).

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A 2016 randomized clinical trial (RCT) (N=416) evaluated the effectiveness of oral dextrose for the prevention of neonatal hypoglycemia in at-risk infants.[1] The trial was based in a New Zealand hospital and enrolled newborns with risk factors for hypoglycemia including maternal diabetes, late preterm, and small-for-gestational-age or large-for-gestational-age status. The trial randomized newborns to receive 40% dextrose gel massaged into the buccal mucosa using one of three regimens (a single dose of 0.5 mL/kg, 1 mL/kg at one hour of life, or multiple doses of 0.5 mL/kg during the first 12 hours of life) compared with placebo gel. The primary outcome was hypoglycemic events in the first 48 hours of life, defined as a heel-stick blood glucose less than 47 mg/dL. Secondary outcomes included neonatal intensive care (NICU) admissions and rates of breastfeeding at six weeks. Prophylactic oral dextrose gel at any dose decreased the risk of hypoglycemia (risk ratio [RR] 0.76; 95% CI, 0.62–0.90; number needed to treat [NNT]=10). A nonsignificant reduction was observed in NICU admissions for hypoglycemia (RR 0.46; 95% CI, 0.21–1.0). No difference was observed in breastfeeding rates at six weeks compared with placebo (RR 1.1; 95% CI, 0.88–1.3). The study found no increase in adverse events. Limitations of the study included possible detection bias because the authors did not report whether outcome assessors were blinded to intervention. Furthermore, most (73%) of the enrolled infants were born to mothers with diabetes, which may limit generalizability.

A 2013 RCT (N=237) assessed the effectiveness of oral dextrose gel in the treatment of neonatal hypoglycemia.[2] The trial enrolled hypoglycemia newborns less than 48 hours old with primary risk factors for hypoglycemia (infants of diabetic mothers, late preterm and small-for-gestational-age or large-for-gestational-age) born at a tertiary care referral hospital in New Zealand. The trial excluded newborns with previous hypoglycemia treatments, serious congenital malformations, fatal conditions, or skin anomalies that would prevent the use of continuous glucose monitors. The hypoglycemic infants were randomized to receive either 40% dextrose gel or placebo gel massaged into the buccal mucosa. In both groups, the infants were encouraged to be fed using a method of maternal choice (breastfeeding, formula, or expressed breast milk). Treatment with the same gel could be repeated once if hypoglycemia persisted. The primary outcome was persistent hypoglycemia (<47 mg/dL) at 30 minutes after treatment. Secondary outcomes included need for NICU admission and breastfeeding rates. Treatment with oral dextrose gel decreased the risk of persistent hypoglycemia compared with placebo gel (RR 0.57; 95% CI, 0.33–0.98; NNT=9) It did not decrease the overall NICU admission rates (RR 0.83; 95% CI, 0.61–1.1), but it did reduce NICU admissions for hypoglycemia (RR 0.54; 95% CI, 0.31–0.93; NNT=9) and lowered the rates of formula feeding at two weeks of age (RR 0.34; 95% CI, 0.13–0.90; NNT=11). Three infants in the placebo group experienced blood glucose concentrations of less than 16 mg/dL with no serious adverse events reported. Limitations of the study included the narrow gestational ages included (>35 weeks) and postnatal age (<48 hours). EBP

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References

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