For bonding and breastfeeding, newborns benefit from a cheek full of dextrose

Newborns with hypoglycemia, or low blood sugar, are becoming more common worldwide, a result of the growing number of mothers who are overweight, obese or diabetic. Breastfed newborns may be treated with supplementary formula feedings or, if that fails, with intravenous fluids, which requires mother and baby to be separated for hours or days at a time. Both processes interfere with mother-baby bonding and reduce the chances that exclusive breastfeeding will be established upon discharge from the hospital.

Now University at Buffalo researchers at Women & Children’s Hospital of Buffalo (WCHOB) and other teams worldwide are proving that a dose of dextrose gel administered into a baby’s cheek, as shown in this video, along with regular feedings can raise babies’ blood sugar, allowing them to stay with their mothers, which promotes breastfeeding. Because this method can eliminate the need for intravenous fluids, which have to be done in the Newborn Intensive Care Unit, it also saves health care costs.

Dextrose gel was added to the existing hypoglycemia protocol for the newborn nurseries at two Buffalo area hospitals in 2014, an idea that came out of a journal club discussion facilitated by Satyan Lakshminrusimha, MD, professor and vice chair of pediatrics in the Jacobs School of Medicine and Biomedical Sciences at UB, chief of the division of neonatology at WCHOB and pediatric neonatologist with UBMD Pediatrics and Munmun Rawat, MD, then a fellow in neonatology at UB, whom he was then mentoring, as well as colleagues at WCHOB and UB.

The UB researchers wanted to evaluate the safety and efficacy of oral dextrose therapy combined with feedings to reduce the need for IV dextrose therapy in babies born at or near-term (35 weeks or more) and to evaluate how that therapy would influence feeding patterns for babies prior to discharge from the hospital.

The UB team published their results last fall in Karger Biomedicine Hub, describing how the use of dextrose gel in asymptomatic babies with low blood sugar helped reduce overall NICU admissions at WCHOB for hypoglycemia from 42 percent to 26 percent. In a majority of babies – 74 percent – the sugar gel successfully addressed low blood sugars versus only 58 percent of babies who received regular feedings alone, prior to implementation of the new protocol.

The results highlight a drawback of the use of feedings alone, according to Praveen Chandrasekharan, MD, research assistant professor of pediatrics at UB, attending neonatologist at WCHOB, pediatric neonatologist with UBMD Pediatrics and co-author on the paper.

“Dextrose gel is used in adult diabetics all the time,” he said, “while in babies, the protocol was to just do feedings. There is sugar in milk, but 100 milliliters of breastmilk or formula has only 7 grams of sugar, while 100 milliliters of gel has 40 grams of sugar.”

“We found that when we used the dextrose gel, we could significantly reduce admissions to the newborn intensive care unit, improve the level of breastfeeding at discharge and reduce health care costs,” he said. “Previously, if the baby didn’t get better after three feeds, they automatically were admitted to the NICU.”

The findings are not only improving outcomes for hypoglycemic newborns, they are also leading to new ways to prevent hypoglycemia. Positive results were recently reported by New Zealand researchers studying how to preventively treat newborns at risk for hypoglycemia, such as infants of diabetic mothers, with one dose of oral dextrose. In their commentary accompanying that paper, UB researchers said this is “a novel approach that requires further investigation.”

The hypoglycemia protocol described in the Biomedicine Hub paper was revised by Stephen Turkovich, MD, chief medical officer of WCHOB and clinical assistant professor of pediatrics at UB with input from the Division of Endocrinology, led by Teresa Quattrin, MD, chair of the Department of Pediatrics at UB, pediatrician-in-chief at WCHOB and president of UBMD Pediatrics. The new protocol was implemented by pediatric hospitalists in the newborn nurseries at WCHOB and Millard Fillmore Suburban Hospital.

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