Diabetic Moms' Breastfed Kids May Stay Lean

BY KERRI WACHTER

FROM DIABETES CARE

Breastfeeding appears to have a protective effect against later obesity for children born to mothers with diabetes during pregnancy, based on an analysis of data from a retrospective cohort study.

The findings could help to prevent childhood obesity in children born to mothers with diabetes during pregnancy. Research has shown that these children have a greater prevalence of obesity in childhood, Tessa L. Crume, Ph.D., of the Colorado School of Public Health at the University of Colorado in Denver and her coinvestigators noted (Diabetes Care 2011;34:641-5).

Both children exposed to diabetes in utero and those unexposed but who had adequate breastfeeding had significantly lower body mass index (BMI), waist circumference, subcutaneous adipose tissue (SAT), and visceral adipose tissue (VAT) at ages 6-13 years than did those who breastfed less.

"Our study provides novel evidence that the effect of exposure to diabetes in utero on childhood adiposity parameters is substantially attenuated by breastfeeding, such that the obesity outcomes in exposed youth who were adequately breastfed were similar to those of unexposed youth. Our data suggest that breastfeeding promotion may be an effective strategy for reducing the increased risk of childhood obesity in the offspring of mothers with diabetes during pregnancy," wrote Dr. Crume and her colleagues.

The researchers used data from a retrospective cohort study entitled Exploring Perinatal Outcomes Among Children (EPOCH). Participants were aged 6-13 years. In addition, they were multiethnic offspring of singleton pregnancies born at a single hospital in Denver between 1992 and 2002. The mothers were members of the Kaiser Permanente of Colorado Health Plan and were still members and living in Colorado over the study period (2006-2009).

The study included 89 youths who were exposed to diabetes in utero. The researchers also identified a random sample of 397 children who were not exposed to diabetes in utero. Children and their biologic mothers were invited for a research visit during January 2006 to October 2009.

Physician-diagnosed maternal diabetes status was ascertained from the Kaiser Permanente Colorado perinatal database – an electronic database linking neonatal and perinatal medical records. All pregnant women were offered screening at 24-28 weeks. Exposure to diabetes in utero was defined as the presence of preexistent diabetes or gestational diabetes diagnosed during the index pregnancy. Birth weight, gestational age, and maternal prepregnancy weight also were obtained from the database.

Mothers were asked about breastfeeding and formula feeding, timing, and the introduction of other solid foods and beverages. Mixed feeding was commonly reported, so a measure of breast milk-months was developed that incorporated duration and exclusivity. Based on a formula that included those factors, breastfeeding status was categorized as low (less than 6 breast milk-months) and adequate (at least 6 breast milk-months).

The subscapular-to-triceps skinfold ratio (STR) was calculated to assess regional differences in subcutaneous fat distribution. In addition, an MRI of the abdominal region was used to quantify VAT and SAT.

The mean age was 9.6 years for exposed youth and 10.6 years for unexposed youth at the study visit – a difference that was significant. Exposed youth were significantly more likely to be non-Hispanic white or Hispanic, and a larger proportion of exposed youth self-reported a Tanner stage less than 2 (prepubertal). Mothers with diabetes during pregnancy were significantly older on average than mothers whose pregnancies were not complicated by diabetes. Exposed and unexposed offspring were not significantly different in terms of intrauterine growth, socioeconomic factors, or infant feeding practices.

Among adolescents with low breastfeeding status, exposure to diabetes in utero was associated with a 1.7-kg/m^2 greater BMI, a 5.8-cm greater waist cir-

cumference, a 6.1-cm^2 higher VAT, a 44.6- cm^2 greater SAT, and a 0. 11-point higher STR, all significant differences. The association between exposure to diabetes in utero and the adiposity parameters was substantially reduced and not significant for adolescents with adequate breastfeeding in infancy with a 0.7-kg/m^2 lower BMI; a 2.7-cm greater waist circumference; a 2.1-cm^2 greater VAT; a 23.4-cm^2 greater SAT; and a 0. 05-point greater STR among exposed versus unexposed children.

The authors reported that they have no relevant financial disclosures. ■

VIEW ON THE NEWS

Study Supports Breastfeeding

Dr. Andreas Plagemann and Dr. Thomas Harder noted that these findings may help answer key questions for the rapidly expanding fields of perinatal programming and developmental origins of health and disease.

"Differentiation and maturation, however, of affected organs and systems, such as the pancreas, adipose tissue, and brain, are not finished at birth. The question therefore arises whether a prolongation of these critical exposures into the neonatal period might have similar effects," they wrote.

The question of whether continuing exposure after birth to altered fuels through breastfeeding might have consequences for child development. "This study by Crume et al. further supports the notion that a long-term breastfeeding (i.e., longer than 6 months) has a protective effect on later overweight risk in [offspring of diabetic mothers]," they wrote.

DR. PLAGEMANN *is head of the division of experimental obstetrics at Charité-University Medicine Berlin.* DR. HARDER *also is a member of that organization. They reported that they had no relevant financial relationships. They commented in an editorial that accompanied the article by Crume et al. (Diabetes Care 2011;34: 779-81).*