Is Eating Solid Food During Labor OK?

BY ROBERT FINN

Consumption of solid food while in labor is safe for most women, according to the results of a large randomized trial.

It's been common practice to deny food to women in labor. Clinicians have worried that if general anesthesia were to be required for an emergency cesarean section, a woman might aspirate food into her lungs. As a result, even as recently as 2007, the American Society of Anesthesiologists recommended that laboring patients not be allowed solid food.

But in a study of 2,426 women, Dr. Geraldine O'Sullivan, consultant anesthetist at St. Thomas's Hospital, London, and her colleagues found that eating a low-fat, low-residue diet had no effect on the rate of spontaneous vaginal delivery, the duration of labor, the cesarean delivery rate, or the incidence of vomiting. In addition, the babies born to women permitted to eat solid foods were just as healthy as the babies born to women who were restricted to consuming water and ice (BMJ 2009;338:b784).

A low-fat, low-residue diet had no effect on the spontaneous vaginal delivery rate, duration of labor, or cesarean delivery rate, in 2,426 women.

A total of 2,426 women with a mean age of 29 years were studied. All women in the study were giving birth for the first time, all pregnancies were uncomplicated, and all babies were singletons. The study was large enough to detect a difference as small as 6.7% in the rate of spontaneous vaginal delivery. The investigators agreed that a difference of this magnitude would be clinically as well as statistically significant.

Instead, they found no statistically significant differences on any measure. The rate of normal vaginal delivery was 44% in both groups. Instrumental delivery was 27% in the eating group and 26% in the water-only group. Cesarean sections were necessary in 30% of the women in the eating group and 30% of the women in the water-only group. A total of 35% of the women in the eating group vomited, compared with 34% of the women in the water-only group. And the mean length of labor was 597 minutes in the eating group, compared with 612 minutes in the water-only group.

Dr. William Camann, director of obstetric anesthesiology at Brigham and Women's Hospital in Boston and past president of the Society for Obstetric Anesthesia and Perinatology, pointed out that the findings of this study didn't answer the question posed in regard to obstetric anesthesia safety concerns. The investigators didn't report whether any of the cesarean section patients received general anesthesia.

"The reason that pulmonary aspiration is so low is probably because the majority of obstetric patients nowadays have regional anesthesia during elective or emergent cesarean sections instead of general anesthesia, rather than [because] oral intake is restricted during labor, although we don't know this for sure. At our hospital only about 2%-3% of cesarean sections are done under general anesthesia.

"We don't really know whether liberalization of oral intake during labor will have adverse consequences or not. And we probably never will because the incidence of pulmonary aspiration is so low that it would take a study enrolling a huge number of women to achieve the statistical power necessary to get that evidence," he said in an interview.

"Labor is not scheduled and predictable, like elective surgery. Although inevitably some women will end up having cesarean deliveries, this is highly likely to be done under regional anesthesia. There has to be a balance between patient comfort and patient safety, but with regard to oral intake in labor, this balance is hard to define," Dr. Camann noted.

Not all of the women in the eating group actually ate solid food, and not all of the women in the water-only group avoided eating. Among the 1,219 women in the eating group, 71% actually ate, and the remainder either drank only water or had no oral intake. Among the 1,207 women in the water-only group, 20% failed to adhere to the protocol and ate some solid food.

The women ate a variety of foods, including fruit juice, soup, cereal, biscuits, fruits, chocolate, toast, vegetable stew, Danish pastry, sandwiches, hamburgers, chicken, and rice.

Denying solid food to women in labor became common after a 1946 study showing pulmonary acid aspiration, called Mendelson's syndrome, in some women who had eaten. But the risk of this has decreased in recent years. Anesthesiologists are more likely to use regional than general anesthesia for cesarean deliveries. In addition, it's common to prescribe proton pump inhibitors or H_2 receptor blockers for women undergoing operative births.

Dr. Camann noted that there have been changes to the guidelines over the years, allowing for clear liquid intake of beverages such as juices, tea, and sports drinks during labor. "In fact, obstetric patients should drink something with electrolytes in it rather than just water to avoid water intoxication, which has been known to occur."

The investigators stated that they had no conflicts of interest related to the study. Dr. Camann also reported no conflicts of interest. ■

DRUGS, PREGNANCY, AND LACTATION

Asthma Medications

Women with asthma may not be optimally treated during pregnancy because of unfounded fears of adverse effects of medications on the fetus. But inadequate treatment can have serious and sometimes disastrous repercussions. A case of a pregnant woman who died from severe uncontrolled asthma because of fear of taking her leukotriene receptor antagonist, reported to the drug's manufacturer, painfully documents this reality.

This case and data from recent studies serve as a compelling reason to adequately treat asthma during pregnancy. One such study of women enrolled in the Organization of Teratology Information Specialists (OTIS) Asthma Medications in Pregnancy Study found that the rate of preterm delivery among women with poorly controlled asthma in the first part of pregnancy was almost twice that of those with well-controlled asthma. Preterm delivery also was almost twofold higher among women who were hospitalized for asthma during pregnancy, compared with those who had not been hospitalized (Ann. Allergy Asthma Immunol. 2008;101:137-43). The effect appeared to be independent from the use of systemic corticosteroids and other covariates that can affect outcome.

BY GIDEON KOREN, M.D.

The OTIS asthma project (www.otispregnancy.org), which enrolled women between 1998 and 2003, also has provided evidence that supports the relative fetal safety of the major asthma medications. The beta-mimetic bronchodilators are not known to cause malformations, and this class in general has not been associated with any fetal safety issues. Although corticosteroids may increase the risk of oral clefts when administered systemically, there is no proof they are associated with malformations when given topically (by inhalation) during pregnancy.

Of the leukotriene receptor antagonists, the most data are available on montelukast (Singulair). The OTIS study compared perinatal outcomes for 96 women who took a leukotriene antagonist with perinatal outcomes for 122 women with asthma who took only short-acting $beta_2$-agonists during pregnancy and 346 women who did not have asthma. Of the 96 women who took a leukotriene antagonist, 72 received montelukast; 22, zafirlukast (another leukotriene antagonist marketed as Accolate); and 2, both medications.

Almost 6% of the babies born to women on a leukotriene antagonist had a major structural defect, a rate that was significantly higher than the rate in the group of women without asthma (0.3%) but not significantly greater than the rate in the other group of asthmatic women (4%). There was no pattern of major structural malformations, and the authors concluded that although the study was small, the results provided "some reassuring information to clinicians and pregnant women" that leukotriene antagonists are not major human teratogens (J. Allergy Clin. Immunol. 2007;119:618-25). Leukotriene antagonists also were not associated with adverse maternal or fetal/neonatal outcomes.

In the soon-to-be-published Motherisk study, we followed women with asthma treated with montelukast during pregnancy and found no increase in malformation rates compared with a general population of women who did not have asthma.

These two studies should provide clinicians and patients with further reassurance about the reproductive safety of another class of asthma medications, although more data are needed on this class of drugs.

A recent issue presented in new research is the potential influence of fetal sex on maternal asthma exacerbations during pregnancy, with two recently published studies providing conflicting results. In a study of 719 women enrolled in the OTIS asthma study, women with a female fetus had a higher likelihood of being hospitalized for asthma during pregnancy, with an odds ratio of 1.84, an effect that was independent of maternal age, ethnicity, smoking, or body mass index (J. Asthma 2008;45:403-7). But another study of a cohort of 10,000 pregnancies in women with asthma over a 12-year period in Canada found no significant differences in moderate to severe asthma exacerbations associated with fetal sex, with an odds ratio of 1.02 (Respir. Med. 2009;103:144-51).

It is important to note that these are association studies, which are not randomized and cannot control for all possible confounders, which should be considered when interpreting these types of epidemiological studies and translating them to practical recommendations for patients. A commonly used rule for such studies is that when the odds ratio for a particular finding is as high as 5 or 6, the association is very unlikely to be a fluke. But if the odds ratio is less than 2, we in Motherisk wait to see more studies before verifying the association.

DR. KOREN *is a professor of pediatrics, pharmacy, pharmacology, medicine, and medical genetics at the University of Toronto. He heads the Research Leadership in Better Pharmacotherapy During Pregnancy and Lactation at the Hospital for Sick Children, Toronto, where he is director of the Motherisk Program.*