Maternal & Infant Nutrition Briefs

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Use of Cough and Cold Medicine during Breastfeeding

With the winter cold season in high gear, many mothers may wonder what cough and cold medications can be used safely while breastfeeding. According to an article published in the Journal of Human Lactation, adverse reactions in infants depend on the dose, timing of the medication, and duration of therapy. The American Academy of Pediatrics (AAP) recommends that mothers choose single-drug cough and cold medications as opposed to combination mixtures. Studies on pseudoephedrine, triprolidine, and loratidine in humans show that a very low percentage of the oral dose actually reaches the infant through the breast milk. The AAP considers pseudoephedrine and triprolidine to be compatible with breastfeeding and therefore, these should be the first-line choices for relief of cold symptoms. Codeine is also considered compatible with breastfeeding by the AAP and may be used for short-term relief as a cough suppressant. Some antihistamines or decongestants also contain aspirin. While the AAP considers ibuprofen, acetaminophen, caffeine, or alcohol to be safe during breastfeeding, mothers should use aspirin with caution. Aspirin may have significant negative effects on breastfed infants. Mothers should take the cough and cold medications after breastfeeding and use the lowest effective dose for only as long as necessary. Mothers should also watch their infants for adverse effects, including restlessness, insomnia, irritability, or drowsiness.

Mitchell JL. Use of cough and cold preparations during breastfeeding. Journal of Human Lactation. 1999;15(4):347-349.

Update on Folic Acid and Neural Tube Defects

Neural tube defects, including spina bifida, occur in approximately 1 per 1000 births in the United States and contribute significantly to infant mortality and disability. Folic acid taken before and during pregnancy can significantly reduce the incidence of neural tube defects. Two recent studies in different regions of the U.S. show remarkable declines in the rate of neural tube defects, presumably due to folic acid interventions.

One study focused on a high-risk region in South Carolina from October, 1992 through September 1998. Patient education and genetic counseling was provided to women who had previously delivered babies with neural tube defects. In addition, a public awareness campaign about the importance of folic acid targeted all women of child-bearing age through brochures, television and radio public service announcements, billboards, and posters. Over the six-year period, the rate of neural tube defects in South Carolina dropped from 1.89 to 0.95 cases in 1000 births, mostly due to fewer cases of spina bifida. During this same time period, the rate of periconceptual folic acid use increased from 8% to 35%. Neural tube defects are expected to reoccur at a rate of 2-5% in a subsequent pregnancy. Among 113 women who took folic acid before conception, none of the subsequent babies had neural tube defects. However, there was a relatively high rate (25%) of miscarriage, fetal death, or ectopic pregnancy in these women.

The second study reported the results of an intervention along the Texas-Mexico border from 1993 to 1998. The objective was to determine if women who had delivered a baby with a neural tube defect could reduce their risk in a subsequent pregnancy. The women who enrolled in the study received counseling before and during their pregnancies related to risk-reduction of neural tube defects. They also received multivitamins with folic acid that contained either 0.4 mg or 4.0 mg, depending on their use of contraceptives. Of 148 subsequent pregnancies, 89% took folic acid before conception. Seventy-nine percent (117) of all pregnancies resulted in live births without neural tube defects, 16% (24) in miscarriage, 4% (6) in elective abortions, and only 1% (1) with a neural tube defect. Notably, the one woman who had a recurrent neural tube defect had refused counseling and folic acid supplements.

These studies suggest that folic acid interventions through education, counseling and supplements can reduce the risk of neural tube defects in high-risk populations. However, in both cases, the rate of miscarriage was higher than the generally accepted rate of 10-15% in the U.S. With January being National Birth Defects Prevention Month, the American Academy of Pediatrics has re-released its policy statement on the use of folic acid for prevention of neural tube defects. All women of child-bearing age should consume 400 micrograms of synthetic folic acid a day from supplements or fortified foods, in addition to the amount of folate naturally occurring in foods. Women with previous pregnancies affected by neural tube defects should take up to 4000 micrograms of folic acid a day beginning one month before conception and continuing throughout the first trimester.

Sevenson RE, Allen WP, Pai GS, Best R, Seaver LH, Dean J, Thompson S. Decline in prevalence of neural tube defects in a high-risk region of the United States. Pediatrics. 2000; 106(4):677-83.
Author unknown. Neural tube defect surveillance and folic acid intervention – Texas-Mexico border, 1993-1998. MMWR Morb Mortal Wkly Rep. 2000; 49(1):1-4.

Long-Chain Polyunsaturated Fatty Acids and Infant Development

Breast milk contains small amounts of docosahexaenoic and arachidonic acids, which are not found in infant formula. Scientists are not certain whether formula-fed infants can produce sufficient amounts of these long-chain polyunsaturated fatty acids to support their rapidly developing nervous systems. To study the problem, researchers have examined the effects on visual development of adding long-chain fatty acids to infant formula. Visual development is commonly used as an indicator of brain development. Two studies published last year came to contradictory conclusions.

In the first study, infants were exclusively fed either standard formula, formula supplemented with docosahexanoic and/or arachidonic acid, or breast milk for at least 16 weeks. The researchers found no differences among the formula-fed groups in visual function, as measured by visual evoked potential tests at 16 weeks and 34 weeks. However, compared to all formula-fed infants, breast-fed infants had higher visual function scores by 34 weeks and higher Bayley's mental development index scores by 2 years. The researchers concluded that adding docosahexanoic acid and arachidonic acid to formula did not influence visual development in healthy formula-fed infants.

The second study, published in the Journal of Pediatric Gastroenterology and Nutrition had a similar study design. The researchers also compared infants fed standard formula and formulas supplemented with fatty acids to infants breast-fed exclusively for at least 17 weeks. Visual acuity was tested at 6, 17, 26 and 52 weeks. Electroretinography was used to test the retinal maturity at 17 and 52 weeks. These researchers also determined blood levels of docosahexanoic acid and arachidonic acid and then correlated them with the results from the visual acuity and development tests. The results of this study showed that there are significant differences in visual development in infants fed formulas supplemented with fatty acids. The infants fed formulas supplemented with fatty acids had more mature retinal function and improved visual function at 6 weeks and 17 weeks respectively. When followed at one year, the supplemented groups still showed higher levels of visual function than unsupplemented groups.

Why the different conclusions? The main difference in the two studies was that a larger dose of arachidonic acid was added to the formula in the second study (amount of docosahexanoic acid was the same). Perhaps arachidonic acid plays a more significant role in neural and visual function than docosahexanoic acid, and increasing the dose contributes to the differences in visual function and development. The bottom line is that although the breast milk is superior to formula, the jury is still out on the question of whether to supplement infant formulas with long-chain polyunsaturated fatty acids. And so the research continues.

Makrides M, Neumann MA, Simmer K, Gibson RA. A critical appraisal of the role of dietary long-chain polyunsaturated fatty acids on neural indices of term infants: A randomized, controlled trial. Pediatrics. 2000; 105(1):32-38.
Hoffman DR, Birch EE, Birch DG, Uauy R, Castaneda YS, Lapus MG, Wheaton DH. Impact of early dietary intake and blood lipid composition of long-chain polyunsaturated fatty acids on later visual development. Journal of Pediatric Gastroenterology and Nutrition. 2000;31(5):540-553.

Exercise during Pregnancy

The Dietary Guidelines encourage women of childbearing age to be physically active as part of a healthy lifestyle. Many women want to continue exercising during pregnancy but are concerned about the safety and health of their unborn child. Physicians have traditionally discouraged continuing or beginning an exercise program during pregnancy, but research suggests that physical exercise provides health benefits to both mother and child.
A review of literature dealing with exercise during pregnancy was recently published in Clinics in Sports Medicine. The author examined various types of exercise, levels of intensity, and health benefits to the mother and the child. The main conclusion was that various types of exercise-- cycling, swimming, walking--can be continued or started safely during pregnancy. Anecdotal evidence suggests that even weight training or scuba diving to less than 30 ft. may be safe during pregnancy, but controlled studies have not been done. Exercise at high altitudes should be done with caution since information is limited as to the safety. However, there have been no reports of injury, pregnancy complications, or losses associated with low-

intensity exercise such as skiing, running, hiking, or mountain biking at moderate altitude. Less information is available about the safety of exercise around the time of conception. Exercise at various levels of intensity help to improve the mother's feeling of well being and level of fitness. This sense of well-being can result in decreased stress, a more relaxed maternal-child relationship, and a decrease in symptoms of depression. Exercise also improves cardiovascular function as seen in increased cardiac output that continues into the postpartum period. Exercise also affects maternal weight gain and postpartum weight loss. Those who exercise during pregnancy and continue afterwards are more successful at returning to their pre-pregnancy weight and fitness level. There also seems to be a relationship between exercise and easier, less complicated labor.

Compared to babies of sedentary mothers, those born to moms who exercised during pregnancy are leaner and seem to have a greater tolerance to the stresses of late pregnancy, labor, and delivery. High intensity exercise programs decrease birth weight, whereas low-to-moderate intensity may increase birth weight. In a recent study, pregnant women were randomly assigned to either a moderate weight-bearing exercise (n=22) or a nonexercising control group (n=24). The exercising mothers participated in treadmill, step aerobics, or stair stepping activities for 20 minutes, 3 to 5 times a week starting at 8 weeks of gestation. Babies of the exercising mothers were heavier and longer than the control babies, although maternal weight gain was similar. Other findings from the study suggest that exercise stimulates growth of the placenta that, in turn, may enhance fetal growth through increased delivery of nutrients. In other studies, babies of exercising moms are reportedly less cranky in the few days after birth and more alert. When evaluated at one year, babies of exercising moms have better motor skills and at five years, they are leaner and do better on standardized tests than control babies. Typically, women included in these studies are at low-risk for poor pregnancy outcomes. Whether similar benefits of exercise would occur in women at risk for low birth weight is not known.

We may very well see the paradigm shift towards a recommendation for pregnant women to include some form of exercise in their prenatal care. This will allow women to maintain their active lifestyles throughout the prenatal period up to delivery and into the postpartum period, resulting in healthier moms and babies.

Clapp JF. Exercise during pregnancy. Clinics in Sports Medicine. 2000;19(2):273-286.
Clapp JF. , Kim H., Burciu, B., Lopez, B. Beginning regular exercise in early pregnancy: effect on fetoplacental growth. Am J. Obstet Gynecol. 183: 1484-8.

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