Prenatal Smoking Exposure Linked To Irritability in Newborn Girls

BY DIANA MAHONEY
New England Bureau

BOSTON — Prenatal smoking exposure is associated with significant increases in irritability among newborn girls but not boys, according to a study presented at a meeting of the Society for Research in Child Development.

The fact that significant differences were not evident among male infants in the large, epidemiologic sample might suggest early links to later gender-specific differences in behavioral outcomes, said lead author Rachel L. Paster, a research assistant in the Centers for Behavioral and Preventive Medicine, Brown University, Providence, R.I.

All of the infants exposed to prenatal smoking exhibited increases in muscle tension, compared with unexposed infants, Ms. Paster reported in a poster presentation.

Using data from the New England Cohort of the National Collaborative Perinatal Project (NCPP), Ms. Paster and colleagues examined the effects of smoking during pregnancy on the neurobehavior of male and female newborns in a sample of 991 healthy mother-infant pairs recruited between 1959 and 1962.

All of the infants exposed to prenatal smoking exhibited increases in muscle tension, compared with unexposed infants, said researchers.

As part of the NCPP, smoking was measured prospectively at each prenatal visit and newborn neurobehavior was assessed using the Graham-Rosenblith behavioral examination. For the current investigation, study participants were classified as nonsmokers, moderate smokers (between 1 and 19 cigarettes per day), and heavy smokers (20 or more cigarettes per day).

The investigators reduced the Graham-Rosenblith measure into three subscales—irritability, muscle tone, and response to respiratory occlusion—and then stratified the sample by sex. They used analysis of variance to examine group differences overall and by gender.

"We found significant differences between smoking groups for irritability in females, but not in males," Ms. Paster reported. "[Least significant difference] tests revealed significant differences between the heavy smoking group and both the moderate and no smoking groups only for female infants, while significant effects of maternal smoking group on muscle tone emerged for both male and female infants."

Least significant difference tests also showed different patterns of effects for males and females with respect to muscle tone. "For females, the heavy smoking group was significantly different from both the moderate and no smoking groups, while for males, the moderate smoking group differed significantly from the no smoking and heavy smoking groups," Ms. Paster said.

Regarding the irritability findings, excessive irritability could indicate an infant withdrawal syndrome, Ms. Paster noted. Additionally, "irritability could potentially affect bonding and attachment with caregivers and may represent an early link to emotional dysregulation," she said.

The hypertonicity findings "may be due to acute effects of nicotine and suggests problems with motor control," Ms. Paster stated.

The findings of this study might be useful in identifying infants at risk for neurodevelopmental deficits and should provide additional incentives for abstaining from smoking during pregnancy, the investigators noted. ■

Gravida's Rhinitis May Pass to Child

BY ROBERT FINN
San Francisco Bureau

SAN DIEGO — Women who experience symptoms of allergic rhinitis during early pregnancy are more than six times as likely to have children with allergic rhinitis than are women who have no such symptoms, Dr. Miwa Shinohara said at the annual meeting of the American Academy of Allergy, Asthma, and Immunology.

The results suggest that women should be aggressive in controlling allergic rhinitis symptoms during early pregnancy, with avoidance of allergens providing the best means of control, said Dr. Shinohara, of department of pediatrics at Kochi (Japan) University.

The retrospective cohort study involved 400 women with physician-diagnosed allergic rhinitis and their offspring. When the children were an average of 9.9 months old (range 1.7-18.7 months), the mothers completed a questionnaire about their allergic rhinitis symptoms during pregnancy. The study's primary outcome measure was whether the children themselves had physician-diagnosed allergic rhinitis.

Of the 400 women, 150 recalled having no allergic rhinitis symptoms during pregnancy, 219 recalled having symptoms early in pregnancy, and 173 recalled having symptoms late in pregnancy. (These figures total more than 400 because some women had symptoms both early and late in pregnancy.)

After adjustment for age, gender, month of birth, and the father's history of allergic rhinitis, women who had symptoms early in pregnancy were 6.3 times as likely to have children with allergic rhinitis as women who had no such symptoms. There was no statistically significant increase in the odds ratio for women who had symptoms late in pregnancy.

Additionally, there was no statistically significant association between the mother's symptoms and a diagnosis of bronchial asthma, food allergy, or atopic dermatitis in their children. And there was no statistically significant association between the father's symptoms of allergic rhinitis during pregnancy and the child's allergic rhinitis.

Dr. Shinohara said that the results imply the presence of an epigenetic mechanism for transmitting allergic rhinitis from mother to child, presumably through organ-specific hypersensitivity. ■

Hydrolyzed Formula After Breast-Feeding May Cut Atopy Risk

BY JONATHAN GARDNER
London Bureau

Babies who have been breast-fed for 4 months and then receive certain types of hydrolyzed formula have a significantly lower risk of developing atopic dermatitis, compared with those given a cow's milk–based formula after breast-feeding, according to results of a 3-year randomized German study of more than 2,000 babies.

One case of atopic dermatitis (AD) could be averted if 20-25 babies were fed either one of two types of hydrolyzed formulas rather than cow's milk–based formulas. Use of the hydrolyzed formulas did not affect the incidence of asthma, however.

"The preventive effect [against AD] developed in the first year and persisted into the third year, indicating real disease reduction rather than postponement of disease onset," wrote the researchers, led by Dr. Andrea von Berg from the pediatrics department at Marien-Hospital, Wesel, Germany.

"Although it remains controversial whether breast-feeding reduces the risk for allergy in high-risk infants, breast-feeding is the gold standard for infant nutrition," they wrote. "It was therefore not the goal of our study to question this gold standard and show that hydrolyzates are worse or better. Instead, we wanted to evaluate, in case of formula feeding (for whatever reason), which formula would be the best alternative to reduce the risk for (allergic manifestations)."

The researchers enrolled 2,252 infants who had at least one parent or sibling with an atopic syndrome. The infants were randomized into groups fed one of three hydrolyzed formulas (extensively hydrolyzed casein formula and partially or extensively hydrolyzed whey formula). An observational arm of 889 babies exclusively breast-fed was also included (J. Allergy Clin. Immunol. 2007;119:718-25).

Infants were exclusively breast-fed during the first 4 months, with the introduction of solid food postponed until after 4 months. Researchers tracked diagnoses of AD, urticaria, food allergies, and asthma.

After 3 years, 904 babies on formula and 543 babies in the breast-feeding arm remained in the study population.

Compared with those in the cow's milk–based formula group, infants fed the partially hydrolyzed whey formula (odds ratio 0.57) and those fed the extensively hydrolyzed casein formula (odds ratio 0.43) demonstrated at 1 year a significantly reduced risk of developing any of the allergic manifestations studied, after adjustment for family history of AD and asthma, sex, and maternal smoking.

By the third year, that effect was gone for allergic conditions as a whole, but the protective effect persisted to 3 years for AD. The 3-year cumulative risk of developing AD was lower in children fed the partially hydrolyzed whey formula (odds ratio 0.60) and those fed extensively hydrolyzed casein formula (odds ratio 0.53), compared with those in the cow's milk–based formula group.

Analyzing outcomes based on family history, the only significant effect identified was among those with a family history of AD who were fed extensively hydrolyzed casein formulas; such babies were at lower risk of AD than those given cow's milk–based formula (odds ratio 0.53).

"This is indeed the first study to suggest that the allergic phenotype in the family rather than a biparental family history modifies the effect of nutritional intervention and may be considered when deciding which hydrolyzate should be given," the researchers wrote. On an intention-to-treat basis, feeding 20 infants extensively hydrolyzed casein formula and 25 partially hydrolyzed whey formula averts a single case of AD. In the smaller group with a family history of AD, the numbers were 11 and 51, respectively. ■