# Nicotine in Breast Milk Is Disruptive to Infant Sleep

BY TIMOTHY F. KIRN
*Sacramento Bureau*

A mother who smokes and breast-feeds appears to be giving her infant a dose of nicotine that significantly interferes with the baby's sleep, according to the results of a study.

Infants spent an average of about a third less time sleeping after their mothers smoked just prior to breast-feeding, compared with when the mothers refrained, wrote Julie A. Mennella, Ph.D., and her associates at the Monell Chemical Senses Center in Philadelphia.

Nicotine is not listed as a drug that is contraindicated during breast-feeding because the benefits of breast-feeding are considered to be so great, they noted.

But the presence of nicotine in breast milk could have many adverse consequences. Mothers who smoke are known to wean their children earlier than are mothers who do not. It might be that sleep-deprived infants tend to be fussier and, if the sleep deprivation occurs because of smoking, the fussiness may stop when the mother stops breast-feeding. That in turn may reinforce a smoking mother's decision to wean. Sleep also is known to be important for learning and development, and therefore disruption of sleep caused by smoking could have lasting consequences. Lastly, adolescents whose mothers smoked during their early life are more likely to smoke, and this may sometimes be because they recognize the flavors from breast milk and come to appreciate them.

The study was conducted with 15 volunteer mother-infant pairs. The average age of the infants was 4 months. The mothers were brought into a testing center twice, and told to refrain from smoking for 12 hours before each testing session, with the last breast-feeding done about 2.5 hours before the session. During one testing session, they were allowed to smoke at least one cigarette, in a separate room from the infant, and during one session they were not (Pediatrics 2007;120:497-502).

Nicotine levels in breast milk were measured at baseline and after smoking. The infants' sleep and awake times were monitored using an ambulatory monitor for 3.5 hours. Nicotine stored in breast milk reaches peak levels about 30-60 minutes after smoking, then declines fairly rapidly.

During the smoking session, the estimated dose of nicotine delivered to the infants was a mean of 549 ng/kg, compared with 127 ng/kg during the nonsmoking session. During the nonsmoking session, the infants slept a mean of 84.5 minutes, compared with 53.4 minutes during the smoking session. All but two of the infants slept less during the smoking session.

Both active sleep and quiet sleep were reduced with smoking, and the duration of the longest bout of sleep declined from a mean of 60 minutes during the nonsmoking session to a mean of 37 minutes during the smoking session. ■



# Prenatal Smoking Tied to Irritability in Girls

BY DIANA MAHONEY
*New England Bureau*

BOSTON — Prenatal smoking exposure is associated with significant increases in irritability in 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 in male infants in the large, epidemiologic sample might suggest early links to later sex differences in behavioral outcomes, said 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, she said 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.

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, the participants were classified as nonsmokers, moderate smokers (between 1 and 19 cigarettes per day), and heavy smokers (20 or more cigarettes per day).


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**Fussiness among newborns whose mothers smoked while pregnant could indicate an infant withdrawal syndrome.**

"We found significant differences between smoking groups for irritability in females, but not in males," Ms. Paster reported. "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."

The 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, whereas for males, the moderate smoking group differed significantly from the no smoking and heavy smoking groups," said Ms. Paster.

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. ■

# Raynaud's of the Nipples Can Impede Breast-Feeding

SAN FRANCISCO — With only a handful of case reports in the medical literature, Raynaud's phenomenon of the nipples isn't the first thing that physicians think of when a breast-feeding mother complains of nipple pain.

If there are no signs of infection and no cracks or fissures on the nipples, one should consider this rare cause of nipple pain, especially if the woman has a history of Raynaud's syndrome, Sharon R. Wiener said at a meeting on antepartum and intrapartum management sponsored by the University of California, San Francisco.

The pain from this vasospasm of the nipples while breast-feeding usually is bilateral, severe, and has a spasm-like throb. The nipple usually turns white but may be blue, purple, or red, said Ms. Wiener, a certified nurse-midwife at the university.

This problem has been misdiagnosed as a candidal infection. Of 12 women in a 2004 case report who were diagnosed with Raynaud's phenomenon of the nipples, 8 had been treated for candidiasis of the breast.

A recent patient seen by Ms. Wiener said she had been diagnosed with Raynaud's syndrome about 5 years before her pregnancy. She complained of episodes in which her nipples would become cold and then go into spasms for many hours.

Sending patients in whom you suspect this problem to a lactation consultant to identify poor latch can support the diagnosis. Alternatively, try applying a cold compress or ice to the nipple to see if it triggers the phenomenon.

The treatment of choice is the calcium channel blocker nifedipine, 5 mg b.i.d. for 2 weeks. It's a quick acting vasodilator, she said. "[Those] I have treated have responded very well and didn't need a repeat of the prescription." In mild cases, warm compresses or warm showers may suffice as treatment. Topical nitroglycerine appears to be effective treatment in half of cases.

Raynaud's phenomenon of the nipples has been associated with rheumatologic diseases, endocrine diseases, autoimmune diseases, cigarettes, and caffeine.

**—Sherry Boschert**