Illicit Drugs and Alcohol in Breast Milk: Assessing Risk to Infants

There is no question that breast-feeding is beneficial to both mother and infant. Manifold advantages ensue from the process: protection against infection and reduced risk of exposure to external sources of food contamination are only two of the many. Yet, the degree and risk involved from in vivo contamination of this precious fluid through maternal use of illicit drugs, tobacco and alcohol is hard to assess.

In studies of 14,000 pregnant or breastfeeding women, 79% used at least one medication. An average of 3.3 different drugs—including legal drugs—were used during breastfeeding. Little information concerning herbal supplements and breast-feeding exists.

Factors that influence the amount of any drug that passes from mother’s milk to an infant include the site of metabolism from mother’s milk to an infant, the concentration of the drug in milk, and the quantity of milk consumed, the infant’s age, how the drug is absorbed and specifics about the safety record of the individual drug come to bear. All of these factors directly influence how much drug passes from the maternal serum into the milk.

Certain calculations are relevant:
A. Infant Dose, estimated by multiplying the drug concentration in milk by the milk volume consumed.
B. Milk-to-Plasma ratio: unbound drug in milk/drug in the mother’s plasma.

Although it is beyond the scope of this brief article to discuss many specific drugs, one can consult the AAP lists of drugs that are categorized by risk to nursing infants. The PDR can be of great help in evaluating pharmaceuticals for use in lactating females.

Use of ‘street drugs’ outweighs benefits of breast-feeding. Mothers who use contraindicated drugs during pregnancy may be expected to be less likely to breast feed, but according to Howard and Lawrence, this is not so. It is also true that women who drink alcohol (6 drinks per week or less) are twice as likely to breast-feed. Similar data on length of duration of breast-feeding is also available. Mothers who use tobacco, alcohol and illicit drugs such as marijuana, and cocaine breast feed for shorter durations but still expose their children to these substances in their milk. Little data are available for methamphetamine users.

Measurement of risk following exposure requires that accurate measurement of drug concentrations in breast milk be available to researchers and clinicians who are confronted with the need to advise and counsel patients. Our laboratory has measured cocaine and its metabolites in breast milk since the early 90’s, and recently concluded a collaborative study of the disappearance rates of alcohol from breast milk in lactating females.

Of the commonly encountered drugs-of-abuse, the following is a brief summary of pertinent facts. Amphetamine tends to concentrate in breast milk at a rate 3 to 7 times greater than serum and is contraindicated during lactation. Cocaine—also contraindicated—is absorbed by the infant from breast milk, and is found in the infant’s urine. We have found a cocaine metabolite considered by some to be cardiotoxic (cocaethylene) in breast milk. Heroin has a low bioavailability in milk, but even those amounts place the infant at risk. Methadone enters the milk at concentrations approaching those in maternal serum. The AAP does consider methadone compatible with breast-feeding at maternal doses of 20 mg/24hr or less. Marijuana and PCP are also contraindicated. Nicotine and tobacco smoke are said to be associated with lower levels of milk production, with colic and increased levels of SIDS. Caffeine levels in milk are likely too low to be clinically significant in infants.

Alcohol, used by more people and in larger quantities than any other psychoactive substance, freely passes into breast milk, at levels parallel to those in blood. Considerable controversy surrounds the recommendations of the AAP in this area. The Institute of Medicine recommends consumption by a nursing mother be limited to no more than 0.5 g/kg/day. This translates to approximately 8 oz of wine or two (12 oz) cans of beer per day for a 132 lb woman per day.

Lactation, a characteristic of animals of the class Mammalia, provides appropriate nutrition to the young of each species. It is important that homo sapiens—who can select the substances they ingest—do so wisely especially when those substances may affect infants.

REFERENCE

2. AAP Committee on Drugs, The Transfer of Drugs and Other Chemicals Into Human Milk, Pediatrics, 108(3) September 2001 pp776-789.

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