

ADMINISTRATION OF CONTRAST MEDIUM TO BREAST-FEEDING MOTHERS

Administration of either an iodinated or a gadolinium-based contrast agent occasionally is indicated for an imaging study on a woman who is breast-feeding. Both the patient and the patient's physician may have concerns regarding potential toxicity to the infant from contrast media that is excreted into the breast milk.

The literature on the excretion into breast milk of iodinated and gadolinium-based contrast agents and the gastrointestinal absorption of these agents from breast milk is very limited. A review of the literature, however, reveals important facts:

- 1) less than 1% of the administered maternal dose of contrast agent is excreted into breast milk; and
- 2) less than 1% of the contrast medium in breast milk ingested by an infant is absorbed from the gastrointestinal tract. Therefore, the expected dose of contrast medium absorbed by an infant from ingested breast milk is extremely low.

The Committee on Drugs and Contrast Media of the American College of Radiology has discussed this issue extensively and has prepared the following summary information and recommendations.

Iodinated X-ray Contrast Media (Ionic and Nonionic)

Background

The plasma half-life of intravenously administered iodinated contrast medium is approximately 2 hours, with nearly 100% of the agent cleared from the bloodstream within 24 hours. Because of its low lipid solubility, less than 1% of the administered maternal dose of iodinated contrast medium is excreted into the breast milk in the first 24 hours^(1,2). Because less than 1% of the contrast medium ingested by the infant is absorbed from its gastrointestinal tract⁽³⁾, the expected dose absorbed by the infant from the breast milk is less than 0.01% of the intravascular dose given to the mother. This amount of contrast medium represents less than 1% of the recommended dose for an infant undergoing an imaging study, which is 2 mL/kg. The potential risks to the infant include direct toxicity and allergic sensitization or reaction, which are theoretical concerns but have not been reported.

Recommendation

Mothers who are breast-feeding should be given the opportunity to make an informed decision as to whether to continue or temporarily abstain from breast-feeding after receiving intravascularly administered iodinated contrast media. Because of the very small percentage of iodinated contrast medium that is excreted into the breast milk and absorbed by the infant's gut, we believe that the available data suggest that it is safe for the mother and infant to continue breast-feeding after receiving such an agent. If the mother remains concerned about any potential ill effects to the infant, she may abstain from breast-feeding for 24 hours with active expression and discarding of breast milk from both breasts during that period. In anticipation of this, she may wish to use a breast pump to obtain milk before the contrast study to feed the infant during the 24-hour period following the examination.

Gadolinium-based Contrast Agents

Background

Gadolinium compounds are safe and useful as magnetic resonance imaging contrast agents. Although free gadolinium is neurotoxic when complexed to one of a variety of chelates, it is safe for use in adults and children. These hydrophilic gadolinium chelate agents have pharmacokinetic properties very similar to those of iodinated X-ray contrast media. Like iodinated contrast agents, gadolinium contrast agents have a plasma half-life of approximately 2 hours and are nearly completely cleared from the bloodstream within 24 hours.

Less than 0.04% of the intravascular dose given to the mother is excreted into the breast milk in the first 24 hours (4-6). Because less than 1% of the contrast medium ingested by the infant is absorbed from its

gastrointestinal tract (7), the expected dose absorbed by the infant from the breast milk is less than 0.0004% of the intravascular dose given to the mother. Even in the extreme circumstance of a mother weighing 150 kg and receiving a dose of 0.2 mmol/kg, the absolute amount of gadolinium excreted in the breast milk in the first 24 hours after administration would be no more than 0.012 mmol. Thus, the dose of gadolinium absorbed from the gastrointestinal tract of a breast-feeding infant weighing 1,500 grams or more would be no more than 0.00008 mmol/kg, or 0.04% (four ten-thousandths) of the permitted adult or pediatric (2 years of age or older) intravenous dose of 0.2 mmol/kg. The potential risks to the infant include direct toxicity (including toxicity from free gadolinium, because it is unknown how much, if any, of the gadolinium in breast milk is in the unchelated form) and allergic sensitization or reaction, which are theoretical concerns but have not been reported.

Recommendation

Review of the literature shows no evidence to suggest that oral ingestion by an infant of the tiny amount of gadolinium contrast agent excreted into breast milk would cause toxic effects. We believe, therefore, that the available data suggest that it is safe for the mother and infant to continue breast-feeding after receiving such an agent.

If the mother remains concerned about any potential ill effects, she should be given the opportunity to make an informed decision as to whether to continue or temporarily abstain from breast-feeding after receiving a gadolinium contrast agent. If the mother so desires, she may abstain from breast-feeding for 24 hours with active expression and discarding of breast milk from both breasts during that period. In anticipation of this, she may wish to use a breast pump to obtain milk before the contrast study to feed the infant during the 24-hour period following the examination.

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