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Breastfeeding

Administration of Contrast Medium to Breastfeeding Mothers

ACR Committee on Drugs and Contrast Media

Administration of an iodinated or gadolinium-based contrast agent occasionally is indicated for an imaging study on a woman who is breastfeeding. Both the patient and the patient's physician may have concerns regarding potential toxicity to the infant from contrast medium that is excreted into the breast milk. The literature on the excretion of iodinated and gadolinium-based contrast agents into breast milk and the gastrointestinal absorption of these agents from breast milk is very limited. A review of the literature, however, reveals important facts: Less than 1 percent of the administered maternal dose of contrast agent is excreted into breast milk and less than 1 percent 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 ACR Committee on Drugs and Contrast Media has discussed this issue extensively over the past year 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 about two hours, with nearly 100 percent of the agent cleared from the bloodstream within 24 hours. Because of its low lipid solubility, less than 1 percent 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 percent 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 percent of the intravascular dose given to the mother. This amount of contrast medium represents less than 1 percent 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.

Disclaimer
This document serves as a guide that may assist radiologists in their clinical evaluation and decision making in regard to patient care in the administration of contrast media. This document should not be deemed to be inclusive of all proper methods of care that could be reasonably directed to obtain the same results. Adherence to this document will not ensure a successful outcome in every situation. The ultimate judgment regarding the propriety of any specific medication, recommended dosage levels, or course of conduct must be made by the radiologist, who would be given all clinical circumstances presented by the individual patient situation.

Recommendation

Mothers who are breastfeeding should be given the opportunity to make an informed decision as to whether to continue breastfeeding or temporarily abstain from breastfeeding after receiving intravascularly administered iodinated contrast medium. 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 breastfeeding after receiving such an agent. If the mother remains concerned about any potential ill effects to the infant, she may abstain from breastfeeding 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 collect 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 about 2 hours and are nearly completely cleared from the bloodstream within 24 hours. Less than 0.04 percent 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 percent 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 percent 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 breastfeeding infant weighing 1,500 g or more would be no more than 0.00008 mmol/kg, or 0.04 percent (four ten-thousandths) of the permitted adult or pediatric (2 years 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 breastfeeding 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 breastfeeding or temporarily abstain from breastfeeding after receiving a gadolinium contrast agent. If the mother so desires, she may abstain from breastfeeding 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 collect milk before the contrast study to feed the infant during the 24-hour period following the examination.

References

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