All correspondence to:

The Breastfeeding Network
PO Box 11126, Paisley PA2 8YB
Admin Tel: 0844 412 0995
e-mail: admin@breastfeedingnetwork.org.uk
www.breastfeedingnetwork.org.uk

Computed Tomography (CT) Scans

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Computed tomography (CT) scanning is used commonly for diagnosis of a variety of conditions. It uses X-rays to provide cross sectional images (slices) of organs and vessels in the body. In order to obtain a CT scan patients lie in a scanner - similar to a bed inside a circular mint. The X-ray tube and the detectors are opposite to each other. Both of these rotate around the patient. (patient.co.uk).

CT scanning provides images in shades of grey - occasionally the shades are similar, making it difficult to discern between two areas. Injection of contrast medium is used to enhance the images to overcome this problem. Barium is commonly used to outline the gastrointestinal tract, and intravenous contrast containing an iodine based substance is used to outline arterial blood vessels.

Breastfeeding after injection of contrast medium

Manufacturers of intravenous contrast indicate mothers should not breast-feed their babies for 24 to 48 hours after contrast medium is given. However, both the American College of Radiology (ACR) and the European Society of Urogenital Radiology note that the available data suggest that it is safe to continue breast-feeding after receiving intravenous contrast.

The ACR website is www.acr.org/Quality-Safety/Resources/Contrast-Manual (Breastfeeding and iodinated contrast medium Chapter 14) states that;

The plasma half-life of intravenously administered iodinated contrast medium is approximately 2 hours, with nearly 100% of the media cleared from the bloodstream in patients with normal renal function 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 [Bettman 2004,Webb 2005]. In addition, less than 1% of the contrast medium ingested by the infant is absorbed from its gastrointestinal tract [Trembley 2012]. Therefore, the expected systemic dose absorbed by the infant from the breast milk is less than 0.01% of the intravascular dose given to the mother. This amount represents less than 1% of the recommended dose for an infant being prescribed iodinated contrast material related to an imaging study (usually 1.5 to 2 mL/kg). The potential risks to the infant include direct toxicity and allergic sensitization or

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reaction, which are theoretical concerns but have not been reported. The likelihood of either direct toxic or allergic-like manifestations resulting from ingested iodinated contrast material in the infant is extremely low.

Newman (1987) comments that contrast media used for both magnetic resonance imaging and computed tomography scans are excreted into breast milk in such small quantities that there is no concern at all for nursing babies. Further that the iodine of contrast material is bonded to a carrier molecule, and the compound does not enter the milk in any noticeable amount [Nielsen 1987, Illett 1981].

The concerns of radiologists to avoid exposing any baby to any product is understandable but dismisses the needs of the mother and baby to continue breastfeeding. Expressing for 24 hours after the procedure is not without difficulty. The use of artificial formula is not without risks and some babies refuse to feed from a bottle whether given expressed breastmilk or formula.

Diatrizoate

- Hale reports a study of a single patient who received 18.5 grams of iodine, diatrizoate levels were undetectable [Fitz 1982] In another woman who received 93 grams of Iodine, total iodine transferred into breastmilk in the first 24 hours was 0.03% [Texier 1983]
- Lactmed states that “Limited information indicates that maternal doses of diatrizoate up to 38 g (containing 18.5 grams of iodine) produce low levels in milk. In addition, because diatrizoate is poorly absorbed orally, it is not likely to reach the bloodstream of the infant or cause any adverse effects in breastfed infants. Guidelines developed by several professional organizations state that breastfeeding need not be disrupted after a nursing mother receives a iodine-containing contrast medium.[ACR, Webb 2005, Chan 2008]

Iohexol

- Lactmed states that “Limited information indicates that maternal doses of iohexol up to 45.3 grams (containing 21 grams of iodine) produce low levels in milk. In addition, because iohexol is poorly absorbed orally, it is not likely to reach the bloodstream of the infant or cause any adverse effects in breastfed infants. Guidelines developed by several professional organizations state that breastfeeding need not be disrupted after a nursing mother receives a iodine-containing contrast medium.[ACR, Webb 2005, Chan 2008]
- Hale states that as a group, radiocontrast agents are virtually unabsorbed after oral administration (<0.1%).Iohexol has a brief half-life of just two hours, and the estimated dose ingested by the infant is only 0.5% of the radiocontrast dose used clinically for various scanning procedures in infants. Although most company package inserts suggest that an infant be removed from the breast for 24 hours, no untoward effects have been reported with these products in breastfed infants. Because the amount of iohexol transferred into milk is so small, breastfeeding is acceptable after intravenously administered iohexol.

Conclusion by ACR

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

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Contrast medium names

- Diatrizoate; Trade Names: Angiovist ®, Cardiografin®, Cystografin®, Gastrografin®, Hypaque®, Reno-M®, Renografin®, Renografin-30®, Renografin-60®, Renografin-Dip®, Retrografin®, Sinografin®, Urovist®

- Iohexol: Accupaque®, Myelo-Kit®, Omnigraf®, Omnipaque®, Omnitrast®

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