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MRI Scans and Breastfeeding

The information provided is taken from various reference sources. It is provided as a guideline. No responsibility can be taken by the author or the Breastfeeding Network for the way in which the information is used. Clinical decisions remain the responsibility of medical and breastfeeding practitioners. The data presented here is intended to provide some immediate information but cannot replace input from professionals.

Multiple national recommendations state that this is not necessary to interrupt breastfeeding following the use of a gadolinium contrast during an MRI scan because of the low bio availability of the injected medium Breastfeeding can continue as normal. Us of mannitol and hyoscine is also compatible with breastfeeding after a single dose.

MRI stands for magnetic resonance imaging. MRI scans use strong magnetic fields to produce detailed images of the organs and other parts of the body. It is a painless but noisy procedure that lasts between 15 and 90 minutes, according to the number of images needed. MRI scans are usually outpatient procedures carried out by radiologists.

Sometimes it is necessary to inject a contrast medium containing gadolinium to make the images more clearly visible. It is not radioactive and is given by intra venous injection into the arm. The gadolinium will be excreted (removed) from the body through the kidneys within 24 hours. For this reason, it is often suggested that mothers should pump and dump their breastmilk during this time.

The Summary of Product Characteristics (SPC) contain wording such as "At clinical doses, no effects on the infant are anticipated due to the small amount excreted in milk and poor absorption from the gut. Continuing or discontinuing breast feeding for a period of 24 hours after administration of ProHance, should be at the discretion of the doctor and lactating mother. (https://www.medicines.org.uk/emc/product/1387/smpc). Gadolinium containing contrast agents are excreted into breast milk in very small amounts (see section 5.3). At clinical doses, no effects on the infant are anticipated due to the small amount excreted in milk and poor absorption from the gut. Continuing or discontinuing of breast feeding for a period of 24 hours after administration of Gadovist, should be at the discretion of the doctor and lactating mother. (https://www.medicines.org.uk/emc/product/2875/smpc)

Local guidelines : Many local guidelines continue to recommend that a mother discontinues breastfeeding for 24 hours. 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 and may introduce a risk of mastitis in the mother. The use of artificial formula is not without risks and some babies refuse to feed from a bottle whether given expressed breastmilk or artificial formula. In trying to do no harm we may inadvertently cause harm to the breastfeeding relationship.

Breastfeeding after injection of contrast medium

The Royal College of Radiologists (RCR), the American College of Radiology (ACR) and the European Society of Urogenital Radiology (ESUR), The Royal Australian and New Zealand College of

Radiologists (RANZR) note that the available data suggest that it is safe to continue breast-feeding after receiving intravenous contrast.

- **The Royal College of Radiologists. Guidance on gadolinium-based contrast agent administration to adult patients.** 2019 https://www.rcr.ac.uk/system/files/publication/field_publication_files/bfcr193-gadolinium-based-contrast-agent-adult-patients.pdf?fbclid=IwAR25iMLQHxPQNeWZ_R5VgXWUJPDfdGPRcbENP0Dppk0WMEmuPB0J8eBDc2c Page 9

"Lactation: a very small percentage of the injected dose of GBCA enters the breastmilk and virtually none is absorbed across the normal gut. While no special precautions or cessation of breastfeeding is required the continuation or cessation of breastfeeding for 24 hours should be at the discretion of the lactating mother in consultation with the clinician."

- **The Royal Australian and New Zealand College of Radiologists (RANZR)** 2018 (page 24)

*2.10 Breast Feeding Recommendations R29. Cessation of breast feeding or expression and discarding of breast milk after iodinated contrast media administration are not required. [*References cited Bettman, Tremblay, Wang, Kubik-Huch]

- **The European Society of Urogenital Radiology (ESUR) 2018.** **http://www.esur.org/fileadmin/content/2019/ESUR_Guidelines_10.0_Final_Version.pdf (Page 29)**

"Lactation: Breast feeding may be continued normally when macrocyclic gadolinium-based contrast agents are given to the mother"

- **The American College of Radiology** (ACR) www.acr.org/Quality-Safety/Resources/Contrast-Manual (Breastfeeding and iodinated contrast page 101) states that Gadolinium-Based Contrast Agents:

"*Like iodinated contrast media, gadolinium-based contrast media have a plasma half-life of approximately 2 hours and are nearly completely cleared from the bloodstream in patients with normal renal function within 24 hours. Also similar to iodinated contrast media, gadolinium-based contrast media are excreted into the breast milk. It is likely that the overwhelming bulk of gadolinium excreted in the breast milk is in a stable and chelated form [Kubik-Huch]. 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 [Kubik-Huch, Rofsky], the expected systemic dose absorbed by the infant from the breast milk is less than 0.0004% of the intravascular dose given to the mother. This ingested amount is far less than the permissible dose for intravenous use in neonates. The likelihood of an adverse effect from such a minute fraction of gadolinium chelate absorbed from breast milk is remote [Webb]). However, 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. These are theoretical concerns but none of these complications have been reported [Rofsky]. As in the case with iodinated contrast medium, the taste of the milk may be altered if it contains a gadolinium-based contrast medium [Webb].*

Recommendation

Because of the very small percentage of gadolinium-based 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 [Kubik-Huch]. Ultimately, an informed decision to temporarily stop breast-feeding should be left up to the mother

after these facts are communicated. If the mother remains concerned about any potential ill effects to the infant, she may abstain from breast-feeding from the time of contrast administration for a period of 12 to 24 hours. There is no value to stop breast-feeding beyond 24 hours. The mother should be told to express and discard breast milk form both breast after contrast administration until breast feeding resumes. In anticipation of this, she may wish to use a breast pump to obtain milk before the contrast-enhanced study to feed the infant during the 24- hour period following the examination."

Other research

Oral absorption is minimal, with only 0.8% of gadopentetate being absorbed. (Lactmed, Hale). Ferris and Goergen confirmed that the amount received by the baby is so small it is not thought to represent any danger to the child.

Webb et al (2005) carried out an extensive literature review on the use of contrast media in pregnancy and lactation. They drew up guidelines which were presented and discussed at a European Symposium. They concluded that "only tiny amounts of iodinated or gadolinium-based contrast medium given to a lactating mother reach the milk, and only a minute proportion entering the baby's gut is absorbed. The very small potential risk associated with absorption of contrast medium may be considered insufficient to warrant stopping breastfeeding for 24 hours following either iodinated or gadolinium contrast agents". This is supported by Chen (2008).

Adverse events

A small number of patients (1-5%) who are given gadolinium as part of the MRI scan, may experience headache, nausea or dizziness but these effects generally pass within a few minutes of the injection. There is no evidence that the breastfed baby experiences any such effects as a result of exposure through breastmilk.

Brand Names

gadoterate (Dotarem™); gadodiamide (Omniscan™); gadobenate (MultiHance™), gadopentetate (Magnevist™, Magnegita™, Gado-MRT ratiopharm™), gadoteridol (ProHance™), gadoversetamide (OptiMARK™), gadoxetate (Primovist™), gadobutrol (Gadovist™)

Other medications used in MRI

To enable a detailed examination mannitol and Hyoscine (Buscopan™) may be administered in addition to the contrast medium.

Mannitol has low oral bioavailability (17%). Passage into milk is likely only in the first few days after birth when the junctions in the alveolar ducts remain open. (Hale)

Hyoscine (Buscopan™) is widely used to treat symptoms of irritable bowel syndrome (https://www.breastfeedingnetwork.org.uk/ibs/). No levels in breastmilk have been reported from studies. It is licensed at half the adult dose for children over 6 years (10 milligrammes three times daily) so the amount passing into breastmilk is likely to be compatible with breastfeeding after a single dose.

References

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