

CT and MR Contrast in Breastfeeding Mothers: Is Current Practice Evidence Based?

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Abstract

Aim

Breastfeeding rates in Ireland are slowly increasing. In the setting of a mother breastfeeding requiring a CT or MRI study with either contrast media we set out to investigate how she would be advised to manage her lactation?

Methods

A survey was sent to all Consultant and trainee radiologist members and fellows (760) in the summer of 2017.

Results

Of the 760 fellows and members contacted 97 (12.7%) responded to the survey. Clinical questions on the topics were asked of 52% (50 respondents) multiple times per year. There was no specific policy in place with regards to advice for nursing mothers following administration of iodinated or gadolinium-based contrast media in 43% of responses (42 respondents). "Pumping and dumping" for 24-48 hours for one or both types of agents was recommended by 68% (66 respondents). That a Faculty guideline would be helpful to them in their practice was identified by 95% of respondents (92 people).

Discussion

Less than 1% of iodinated or gadolinium-based contrast is excreted in breast milk and less than 1% of this is absorbed. These are negligible amounts. Currently almost 70% of professionals are recommending mothers pump and dump whereas research suggests that it is safe to continue breastfeeding without interruption.

Introduction

Breastfeeding rates in Ireland are low but increasing (46% initiation in 2004, 56% in 2013) ¹. Due to the slow but continual increase in breastfeeding rates, radiologists are increasingly being asked if a period of interruption is required following the administration of iodinated or gadolinium-based contrast media. Nursing mothers come in contact with the radiology department when they experience perinatal complications either directly relating to pregnancy and delivery or due to pre-existing co-morbid conditions which can be exacerbated by pregnancy and delivery. Potential studies include, computed tomography pulmonary angiography (CTPA), MR brain with contrast for stroke-like symptoms or severe headache and CT abdomen and pelvis in settings of ileus or obstruction.

Breastfeeding is important for the nursing dyad. There is good evidence to support lower mortality and morbidity from infection in children who are breastfed for longer ². For the lactating mother, it can decrease the risk of breast cancer and may decrease the risk of both diabetes and ovarian cancer ²⁻⁴.

There are significant risks to the breastfeeding relationship of interruption even if temporary. Not all mothers can express their breastmilk or indeed have access to the necessary skills and equipment, contrary to popular belief not all babies will feed from a bottle when they are used to breastfeeding. This may lead to mastitis in the mother and dehydration of the baby. This further exacerbates the medical issues the mother is currently experiencing adding additional stress and co-morbidity.

It was hypothesized that historically low rates of breastfeeding impacted on clinical knowledge, experience and practice. Further that as a result of this, medical recommendations to nursing mothers were not evidence based. Anecdotally, on social media peer support networks, breastfeeding mothers report differing advice regarding the need to interrupt breastfeeding following administration of contrast media for CT or MR investigations. A need was therefore determined to assess clinical practice in Ireland and the need for a National evidence-based guideline.

Methods

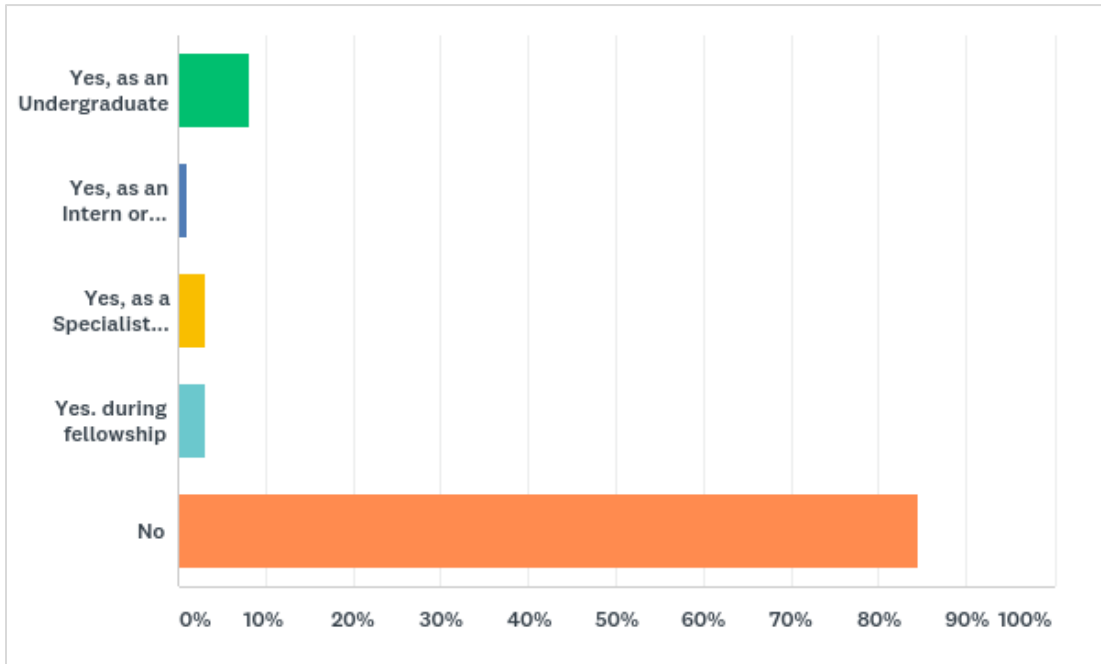
The Faculty of radiology surveyed its Fellows in the summer of 2017 regarding practice with respect to nursing mothers and contrast studies. The survey was administered via Survey Monkey TM and sent to all 760 fellows of the faculty. A reminder email was sent in late August 2017. Participants were asked nine questions. Information was gathered on department role (Consultant or Trainee), training received in breastfeeding medicine, subjective assessment of knowledge level on the topic, presence or absence of a departmental policy on the topic, practice regarding continuing or temporarily interrupting breastfeeding, members' opinion on the need for a national guideline on the topic.

Results

Disappointingly only 97 responses were received from 760 recipients, a response rate of 12.7%.

The majority of respondents (65, 67%) were Consultant Radiologists, with a near equal mix of Pre and Post Fellowship Registrars, 15 (15.4%) and 16 (16.4%) respectively. Of the 82 respondents (84.5%) had not undergone any form of training in breastfeeding medicine, neither at undergraduate nor post-graduate levels. 15 (15.4%) had undergone some training. This was as an undergraduate (8, (8.2%), intern 1, (1.03%), specialist Registrar 3, (3.09%) and on while Fellowship 3, (3.09%), (Figure 1).

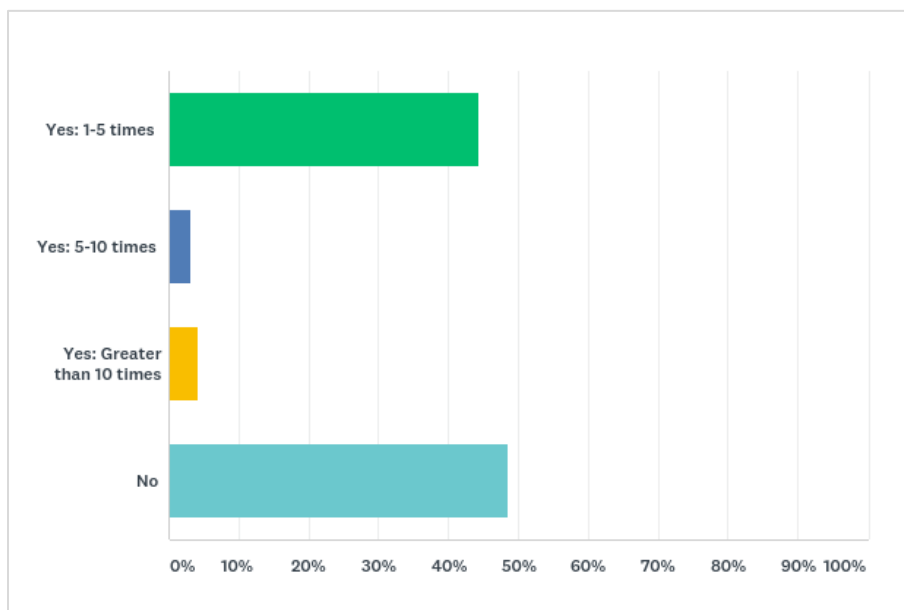
Figure 1: Survey Question 2 – Did you undergo Breastfeeding Medicine training?



Almost 70% of respondents (64) did not feel appropriately trained to provide evidence-based information on the topic to support their practice. It has to be assumed that they had either not attended or had been unable to find appropriate continued professional development (CPD) on this topic despite having identified a deficiency in their knowledge.

Of the respondents 50 (51.5%) had been asked clinical questions on the topic within the past year with a small number of respondents asked on greater than ten occasions (4 respondents, 4.1%), (Figure 2).

Figure 2: Survey Question 4 – Have you been asked about breastfeeding and contrast media in your clinical practice in the past year?



Fifty-two (57%) were aware of a departmental guideline regarding contrast and breastfeeding within their departments. A small number of these policies were based on international guidelines from the ACR and the RCR, 12%, (12 respondents) and 27% (26 respondents) respectively.

Most practitioners 49 (56% of 87 responses), recommended cessation of breastfeeding post contrast administration for 24-48 hours (Figure 3). There was further variation in practice as some practitioners only recommended interruption for iodinated contrast (8, 8.3%), others for gadolinium-based contrast media (11, 11.3%) but the majority who recommended interruption of breastfeeding, recommended it for both (39, 40.2%) (Figure 4). Ninety (95%,) respondents thought that a Faculty guideline would be helpful in their daily practice.

Figure 3: Survey Question 7 – Do you recommend the cessation of breastfeeding to patients?

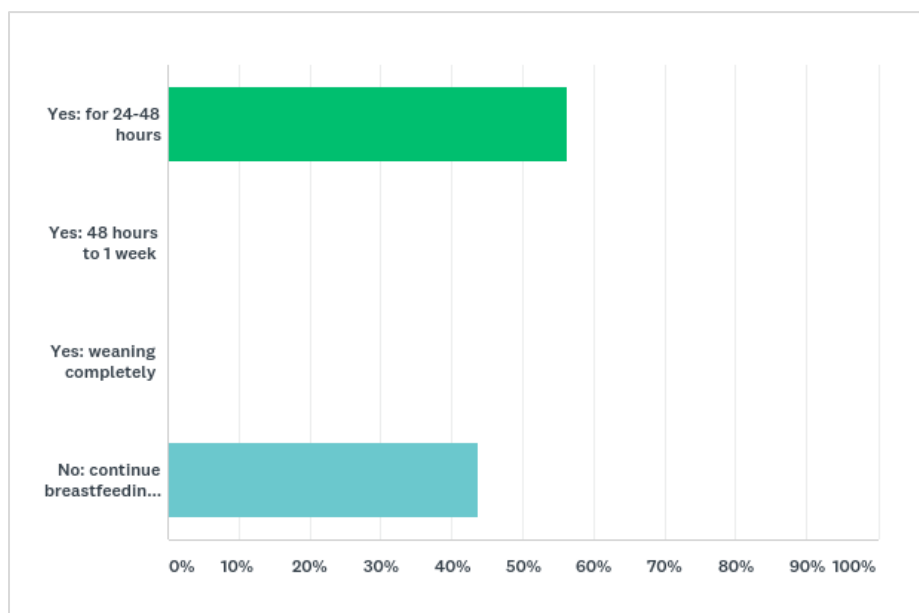
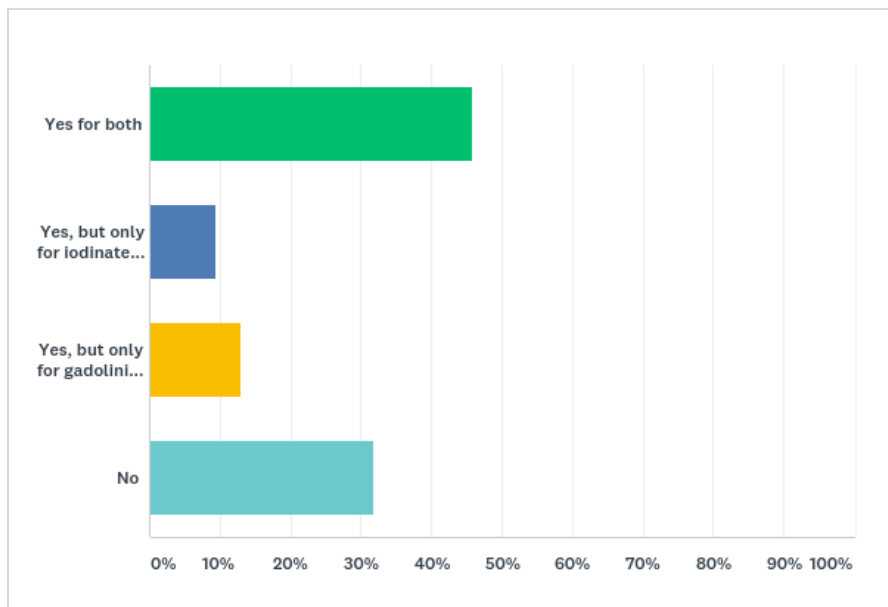


Figure 4: Survey Question 8 – Do you recommend that Mothers “pump and dump” breastmilk after iodinated or gadolinium-based contrast media?



Discussion

Results from this survey demonstrate that 54 respondents, 56% of our Fellows were recommending interruption to breastfeeding following administration of either gadolinium or iodine-based contrast. This recommendation is not in keeping with the current evidence and in fact poses risk to the nursing dyad in terms of mastitis in the mother and the negative potential health risks to both mother and Infant of early permanent weaning.

Less than 1% of the administered dose to the Mother of iodinated contrast material (CT contrast) is excreted into breast milk and of this less than 1% of this dose is absorbed by the infant. No adverse effects have been reported in the literature. Mothers can be safely advised to continue nursing without interruption⁵⁻¹⁰. This is consistent with the recommendation from the American College of Radiology and the Royal Australian and New Zealand College of Radiologists^{8,11,12}.

Research studies demonstrate that less than 0.04% of the dose of gadolinium based contrast media administered intravenously to the mother is excreted into her breast milk in the first 24 hours, and of that which is ingested by the infant, less than 1% is absorbed from its gastrointestinal tract resulting in a dose to the infant which is less than 0.0004% the dose administered to the mother^{8-10,13-15}. Lactating mothers can therefore be safely advised to continue nursing without interruption. This is consistent with the recommendation from the American College of Radiology and the Royal Australian and New Zealand College of Radiologists^{8,11,12}.

The majority of respondents 82 (84.5%) had not undergone any training in breastfeeding medicine and 66 (68%) did not feel confident to discuss their practice in this area based on evidence-based principles. This is significant as it explains the heterogeneity in practice and deviation from evidence-based practice in this area. It highlights a need for inclusion of modules in breastfeeding medicine within both undergraduate and post graduate curricula. As national health policies emphasize the importance of supporting breastfeeding dyads to reach their nursing goals it is important that radiologists and other healthcare professionals are provided with the appropriate evidence-based information to advise lactating mother. An e learning module could be developed for use by practitioners to support CPD.

The evidence does not support interruption of breastfeeding with the described risks to the nursing dyad of early weaning, mastitis and loss of the protective effects of breastfeeding for both mother and infant. These findings led to the development of a national guideline which is now freely available on the Faculty website (www.radiology.ie) for fellows and patients alike¹⁶.

Iodinated (CT) and gadolinium-based (MR) contrast agents are safe in breastfeeding mothers. Women should be advised to continue breastfeeding their children as normal without any interruption to breastfeeding post imaging. It is important to avoid unnecessary interruptions to breastfeeding due to the health risks to the nursing dyad of potential early weaning and the risk of mastitis in the mother.

Declaration of Conflicts of Interest:

The authors have no conflicts of interest to declare.

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