The use of MR contrast media in pregnant women and small children

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In general, at most institutions pregnancy has been a contraindication for giving gadolinium-containing contrast media based the principle of not exposing the fetus to drugs and the unknown teratogen risk to the fetus. However, when reviewing the literature there is no evidence that gadolinium agents cause chromosomal damage or teratogen effect (1-4). There are no reports in the literature on negative effects on the fetus or neonate after the administration of gadolinium-containing contrast media to the pregnant or breast-feeding mothers (2). Based on guidelines from institutions in Europe gadolinium contrast media to pregnant women is considered safe. However in the choice between different contrast media it has been recommended to use those gadolinium agents that have been on the market the longest due to the overall longer experience with these contrast media compared to more recent developed contrast media (2). MRI is to be preferred over CT due to the radiation given both to the mother and the fetus when using CT.

Therefore, in the decision making to give or not give intravenous gadolinium-containing contrast media to pregnant women has to be based on the medical indication. There is no reason to give intravenous contrast media if the examination can be performed without but if indicated there is no reason to not use intravenous contrast media to answer the clinical question on hand. In pregnant women and breast feeding mothers with reduced kidney function the same restrictions for the use of gadolinium-containing contrast media has apply as for others with reduced kidney function to reduce the risk for NSF.

There are barely any reports in the literature on the value of indiscriminated use of intravenous contrast medial administration in brain MRI in small children. A few recent studies have demonstrated that indiscriminating use of intravenous contrast media to neonates, and infants (under the age of 2 years) neither help in the diagnosis nor in detecting abnormalities. For example a recent study evaluating the use of contrast media administration in brain MR examinations in the workup of seizures in children younger than 2 years (5) the administration of contrast medium was felt to be essential in formulating a diagnosis in a total of 8 (1.8%) studies, all of which involved documented or highly suspected cases of infection. In an additional 26 cases (5.9%), which included 4 cases of neoplasm, contrast was felt to be useful but not essential in reaching a diagnosis. Contrast was judged not helpful in making the diagnosis in the other 403 studies (92.3%). Similar results was seen in another study, from the same research group (6), evaluating the yield of contrast media administration in children examined with brain MRI due to developmental delay. They concluded that intravenous gadolinium has an extremely low yield in children under the age of two years where developmental delay is the primary clinical concern. In young children for whom developmental delay is a secondary clinical concern, they advocate the use of gadolinium particularly where tumor or infection is clinically suspected.

In general, it can be stated that the indiscriminate use of gadolinium adds unnecessary costs, scanning time, and interpretation resources and potentially places the patient at added risk for both additional sedation times and the possibility (although extremely low) of contrast reaction. There is no question that there is a value of contrast media in the evaluation of known or suspected neoplasm and infections in the brain, head and neck and spine.
In children with reduced kidney function the same restrictions for the use of gadolinium-containing contrast media has apply as for others with reduced kidney function to reduce the risk for NSF.

This presentation will focus the administration of gadolinium-containing contrast media in the pregnant mother and in the small children and to suggest some guidelines based on literature review, experience and ongoing research.

References
5. Petrou Myria; Foerster Bradley; Maly Pavel V.; Eldevik Odd P.; Leber Steven; Sundgren Pia C. Added Utility of Gadolinium in the Magnetic Resonance Imaging (MRI) workup of seizures in children younger than 2 years. J of Child Neurology 2007.22;200-203.