

IMF HOTLINE COORDINATORS ANSWER YOUR QUESTIONS

The IMF Hotline 800-452-CURE (2873) consistently provides callers with the best information about myeloma in a caring and compassionate manner. The Hotline is staffed by Paul Hewitt, Missy Klepetar, Nancy Baxter, and Debbie Birns. The phone lines are open Monday through Friday, 9am to 4pm (Pacific Time).

To submit your question online, please email TheIMF@myeloma.org.

Is the use of gadolinium in MRI a necessary part of the imaging test and is it safe?

MRI (magnetic resonance imaging) is a diagnostic test that uses magnetic energy to produce detailed two- or three-dimensional images of organs and structures inside the body. It can provide 20-30% more information than a standard x-ray (a form of electromagnetic radiation). An MRI test is useful in assessing the disease state

of a patient with multiple myeloma. It can detect the amount of myeloma cell infiltration in the bone marrow before bone destruction is evident on x-rays. An MRI is excellent for imaging of the axial skeleton (the bones of the head and neck, rib cage, and vertebral column) and can help distinguish between benign and malignant compression fractures. It can illustrate spinal cord compression as well as head and neck plasmacytomas. In myeloma, MRI is considered to be more sensitive than standard radiography.¹

Gadolinium is a contrast agent – a dye injected into the body to enhance images from the MRI. Gadolinium is a colorless, non-radioactive, water-like liquid. It is toxic but usually rapidly cleared by the kidneys. Gadolinium is taken up by active myeloma lesions. This contrast enhancement can help identify areas of myeloma involvement. However, there has been some debate regarding the wisdom of using gadolinium in myeloma patients because of potential risks. Many myeloma patients have kidneys that are compromised by their disease and their creatinine clearance is lower than in individuals with healthy kidneys. Patients with renal dysfunction who get an MRI using gadolinium dye are at risk to develop Nephrogenic Systemic Fibrosis (NSF). NSF is a systemic disease, meaning it affects multiple systems of the body or the body as a whole. Symptoms of NSF include hard, shiny, reddened or darkened patches of skin that tighten and become extremely painful; joint inflexibility; painful joints; loss of movement; yellow-colored eyes; as well as potential lung, heart, and other organ damage. This is therefore rather a serious potential side effect.

It is thus best to avoid use of gadolinium in the setting of known renal compromise. In addition, it is worthwhile to note that at the December 2009 American Society of Hematology (ASH) meeting in New Orleans, data was presented by Mariateresa Fulciniti, PhD (Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA), entitled



Paul Hewitt, Missy Klepetar, Nancy Baxter, and Debbie Birns

“Gadolinium-containing contrast agent promotes multiple myeloma cell growth: implication for clinical use of MRI in myeloma” (ASH abstract 1809). Dr. Fulciniti’s collaborators included others at Dana-Farber Cancer Institute and researchers at the Myeloma Institute at the University of Arkansas (Little Rock, AR).

The investigators involved in this study of gadolinium, both in the laboratory setting and in the tissues of myeloma patients, drew the following conclu-

sion: “These results, confirming both in vitro and in vivo growth-promoting effects of Gd-containing contrast agent on multiple myeloma, suggest the need for further analysis of the mechanism of its action on myeloma cells and careful analysis of its clinical impact in multiple myeloma patients undergoing MRI evaluation.” To watch the video of Dr. Fulciniti’s IMF interview at ASH, read the abstract, and see the poster for this presentation, please visit the IMF website at www.myeloma.org.

The question thus becomes: is it possible to get sufficient information from MRI imaging without using gadolinium? The answer appears to be yes. Large groups specializing in multiple myeloma, such as the Myeloma Institute in Little Rock and others, specifically exclude gadolinium from their standard MRI sequence protocols. **The new International Myeloma Working Group (IMWG) imaging guidelines² likewise recommend imaging without gadolinium in part to avoid the risks, but also because excellent results can be obtained without gadolinium.**

In conclusion, it is possible for an imaging specialist to perform an MRI without the use of gadolinium and still get an accurate assessment of disease. This avoids any potential risks. Please discuss all of the above with your oncologist and/or radiation oncologist prior to having an MRI.

Editor’s Note: If you would like to obtain copies of the referenced papers, please contact IMF Hotline Coordinators at 800-452-CURE (2873).

¹ Engelhardt M, Kleber M, Frydrychowicz A, et al. “Superiority of magnetic resonance imaging over conventional radiographs in multiple myeloma.” *Anticancer Research*, 29:4745-4750, 2009.

² Dimopoulos M, Terpos E, Comenzo RL, et al. “International myeloma working group (IMWG) consensus statement and guidelines regarding the current role of imaging techniques in the diagnosis and monitoring of multiple myeloma.” *Leukemia*; 23:1545-1559, 2009.