

# Multiple sclerosis: Reduced levels of contrast agent deposits in the brain

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Gadolinium, one of the rare earth elements, is used as a contrast agent that enhances the quality of MRI examinations of internal organs and tissues. Researchers from Charité - Universitätsmedizin Berlin (NeuroCure Clinical Research Center and Department of Radiology) and the Max Delbrück Center for Molecular Medicine, have studied the extent to which repeated use of gadolinium-based MRI contrast agents leads to gadolinium deposition in the brains of patients with multiple sclerosis. Their report, which has recently been published in the *Multiple Sclerosis Journal*, suggests that the risk of such accumulations occurring is reduced if contrast agents known as 'macrocylic agents' are used.

Research conducted over the past few years has shown that the use of gadolinium-based MRI [contrast agents](#) can lead to permanent deposits in certain areas of the brains of patients undergoing MR imaging. There is currently no evidence to suggest that these deposits pose a health risk. However, evidence regarding the existence of gadolinium deposition in different brain regions has caused uncertainty and concern among patients and physicians. The issue of gadolinium deposition is of particular relevance to patients with [multiple sclerosis](#) (MS). This is because patients usually develop symptoms as young adults, and go on to have a relatively high number of contrast-enhanced MRI scans during their lives.

Under the leadership of PD Dr. Michael Scheel and Prof. Dr. Friedemann Paul, a team of researchers studied the use of two different types of commonly-used MRI contrast agents. Results from their

research were able to confirm what previous studies have shown in other patient groups; namely, that the repeated use of a certain type of linear contrast agent leads to deposits in a key area of the cerebellum. "Patients who received a different type of MRI contrast agent - one that is referred to as a macrocyclic contrast agent - showed no evidence of gadolinium brain deposition," explains PD Dr. Scheel. The researchers go on to add that "available data currently suggest that the risk of deposits is considerably higher with contrast agents that have a linear molecular structure. This effect appears to be absent, or much reduced, when using contrast agents with a ring-shaped, macrocyclic structure." With regard to the relevance of their results for future clinical practice, the researches have a clear recommendation: before performing contrast-enhanced MRI examinations in [patients](#) with MS, neurologists and radiologists should give due consideration to the findings of this study. At the Charité, only agents with a macrocyclic structure have been used as MRI contrast agents for several years.

**More information:** L. Schlemm et al, Gadopentetate but not gadobutrol accumulates in the dentate nucleus of multiple sclerosis patients, *Multiple Sclerosis Journal* (2016). [DOI: 10.1177/1352458516670738](#)

Provided by Charité - Universitätsmedizin Berlin

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