

What is Gadolinium and why is it used in MRI?

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The vast majority of MRI examinations are performed without gadolinium as often there is sufficient information available from the scans we perform to enable accurate diagnoses to be made.

In some cases however, we need to use something called a contrast agent in order to:

- highlight abnormal structures in the body
- assess the function of certain parts
- rule out the presence of abnormality

In MRI, the contrast agent we use contains gadolinium.

All gadolinium is not alike...

Like any pharmaceutical product, there are a wide range of intravenous gadolinium based contrast agents available. They can broadly be broken down into linear agents that have the potential to release free gadolinium ions into the body and cyclical agents that are the least likely to release free ions.

At the Royal Devon & Exeter NHS Foundation Trust, we currently use:

- Gadovist® (Gadobutrol)
- Dotarem® (Gadoteric acid)
- Clariscan® (Gadoteric acid)

These are cyclical agents.

We also use:

- Primovist® (Gadoxetic acid disodium)

This has a linear structure and is used very specifically in Liver imaging.

- Magnevist® 2mmol/l solution for joint injections (Gadopentetic acid dimeglumine salt)

In the past we have used:

- Magnevist® (Gadopentetate dimeglumine)

This has a linear structure.

What is gadolinium retention?

In March 2017, the European Medicines Agency (EMA) confirmed that for a number of patients exposed to a very particular range of intravenous gadolinium based contrast agents; a small amount of gadolinium was found to remain in the patient's brains long after their last scan.

There were no signs of harm associated with this retention; however the EMA recommended that these specific agents were removed from use.

The specific agents correlated with gadolinium retention are:

- Multihance® (containing Gadobenic acid)
- Omniscan® (containing Gadodiamide)
- Magnevist® (containing Gadopentetic acid)
- OmniMark® (containing Gadoversetamide)

These are all linear contrast agents.

Gadolinium has been requested for my scan, will it cause me harm and can I refuse to have it?

Gadolinium based contrast is only given to patients after weighing up the risk versus benefit. It is only requested if it is necessary to answer the clinical question.

We do not currently use any of the agents that the EMA have recommended are removed from use.

We routinely use cyclical agents that have the safest profile and only use a linear agent where there is no alternative product available.

You can always refuse to have any form of treatment. However you should be aware that this can limit what information is available to the referring doctor and may significantly hinder diagnosis.

No harm has been connected with retained gadolinium.

Have I had a linear contrast agent in the past?

If you had a contrast enhanced MRI scan more than 5 years ago, there is a chance that we may have used Magnevist®.

If you would like us to investigate, we would be happy to do this for you.

We keep records of all contrast injections and we can very quickly find out whether you have had this product in the past.

An MRI radiographer is available to speak to Monday to Friday 9am-5pm on **01392 403680** and can take any queries you may have.

This leaflet has been adapted for the use by the Medical Imaging Department at the Royal Devon & Exeter Hospital with permission from the University Hospitals Plymouth NHS Trust.

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