

ANAESTHESIA, SEDATION AND NEED FOR VIGILANCE

A child with scoliosis was referred for an MRI investigation of their spine. Due to their age, the patient was sedated with intravenous anaesthesia.

The monitoring equipment and anaesthetic machine were MR Conditional, and placed correctly inside the MR environment during the examination. The infusion pump delivering the anaesthesia was MR Unsafe, so was positioned in the MR control room and connected to the patient via a line passed through the waveguide. Induction was performed in the recovery area adjacent to the MR environment using a separate MR Unsafe anaesthetic machine and infusion pump. This is routine practice as it allows the anaesthetist(s) to closely monitor the patient in a safer clinical area than the MR environment during the induction process.

The patient's back brace, which contained some metallic bolts and buckles, had not been noticed prior to entering the MR environment. It was discovered when the localiser sequence showed a substantial susceptibility artefact (Figure 1). The radiographer immediately entered the MR environment and moved the patient out of the bore to check what was causing the artefact, discovering the back brace.

While removing the brace, the radiographer inadvertently knocked and broke the connection between the infusion pump and the patient. Scanning was resumed, but it was noticed shortly after that the patient was beginning to wake and start moving, requiring the anaesthetic team to quickly enter the MR environment and remedy the situation.

Why is it important?

MRI procedures that involve anaesthesia present additional MR safety concerns due to the increased presence of staff members who may be less familiar with the MR environment and an increase in the use of MR Conditional or MR Unsafe equipment.

Working practices should always be performed according to the guidelines published by the MHRA¹ and the Association of Anaesthetists and the Neuro Anaesthesia and Critical Care Society of Great Britain and Ireland². A report into a separate tragic accident involving a child who died after an MRI under general anaesthetic has recently been published by the Healthcare Safety Investigation Branch (HSIB)³

How has this made a difference and what has changed?

The MR unit has since improved the level of MR safety training that can be accessed by members of the anaesthetic teams and introduced a final 'pause and check' procedure before any sedated patient enters the MR environment.

References

- [1] Medicines and Healthcare products Regulatory Agency. Safety Guidelines for Magnetic Resonance Imaging Equipment in Clinical Use. 2016
- [2] S.R. Wilson et al. Guidelines for the safe provision of anaesthesia in magnetic resonance units. *Anaesthesia* 2019 74(5): 638-650
- [3] Healthcare Safety Investigation Branch. Undiagnosed cardiomyopathy in a young person with autism, 2020

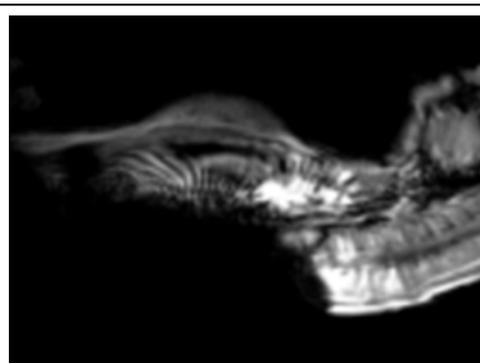


Figure 1. Localiser image of the sedated patient, showing the substantial image artefact caused by the metallic bolts and buckles in the patient's back brace.