

Gadofosveset A Viewpoint by David J. Grand

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In recent years, utilisation of magnetic resonance (MR) angiographic techniques has dramatically increased. Bolus gadolinium enhancement as well as faster gradient speeds provide the temporal resolution necessary for diagnosis of vascular lesions. As minimally invasive endovascular treatment options continue to demonstrate clinical benefit, the demand for safe and accurate characterisation of vascular lesions will grow.

MR imaging is uniquely suited for routine vascular imaging. Traditional catheter-based angiographic techniques are invasive, requiring arterial puncture with its inherent small but real risk of vascular injury and post-procedural bleeding. They also rely upon potentially nephrotoxic iodinated contrast agents in a patient population frequently suffering from underlying renal dysfunction. Although computed tomography angiography has made great strides with extremely thin slices and powerful post-processing, it too requires an iodinated contrast agent as well as ionizing radiation.

In current practice, MR angiography routinely produces excellent results. However, reproducible

and accurate MR angiography currently requires fastidious attention to contrast bolus timing, as imaging must begin at the peak concentration of the gadolinium agent. Vendors have incorporated multiple bolus tracking strategies into the scanners which work with varying degrees of success. Poor bolus timing, however, remains the most common reason for limited or even failed MR angiographic exams.

Blood-pool contrast agents such as gadofosveset offer a more forgiving option for MR angiography by remaining within the blood pool for a longer period of time. Because the level of intravascular contrast enhancement remains higher for longer, bolus timing should be less critical, allowing for a diagnostic study even in the setting of unpredictable haemodynamics. Additionally, multi-station MR angiographic techniques often currently require multiple injections of traditional gadolinium agents, as imaging times are too long to achieve during a single pass of vascular enhancement. For these reasons, blood-pool agents such as gadofosveset may offer significant advantages over traditional gadolinium chelates, and studies aimed at ascertaining the reproducibility of high quality angiographic images with traditional versus blood-pool contrast agents should be performed. ▲