

Gadofosveset

A Viewpoint by Mathias Goyen

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Considering the enormous success of extracellular gadolinium-based contrast agents for contrast-enhanced magnetic resonance (MR) angiography, what is likely to be the role for an intravascular contrast agent such as gadofosveset? The answer lies in the key question: can gadofosveset be used in first-pass (arterial) imaging with equal effect? As the answer appears to be yes, this suggests that gadofosveset can be used instead of the current extracellular contrast agents for first-pass arterial imaging. The crucial advantage of gadofosveset, i.e. the presence of persistent high intravascular enhancement significantly greater than with extracellular agents, can be exploited to acquire additional high-resolution images in the steady state which lead to a better delineation of vessel pathology. Steady-state imaging offers the possibility of depicting the entire vascular system without relevant extravasation of the contrast medium from the intravascular space. The extended diagnostic window provided by gadofosveset makes the examination more convenient because it is less dependent on the

bolus dynamics. For these reasons gadofosveset will make it possible for physicians to detect vascular disease earlier and optimise the evaluation of therapeutic options including percutaneous intervention and vascular surgery. In addition, imaging of a gadofosveset-bolus missed in the first-pass examination does not require an additional contrast agent injection.

For calf- and pedal-vessel angiography, the prolonged imaging window in combination with increased relaxivity provide higher resolution images, which are likely to improve the diagnostic potential compared to extracellular MR contrast agents used to date. As gadofosveset-enhanced MR angiography depends far less on blood velocity, post-contrast imaging is dramatically improved in vessels with slower blood flow, resulting in higher specificity. Furthermore, the blood-pool targeting characteristic of gadofosveset might lead to new applications such as assessment of gastrointestinal bleeding or improved perfusions.

In summary, gadofosveset has the potential to open new horizons in diagnostic MR angiography by increasing the spatial resolution and the robustness of MR angiographic examinations and facilitating the examination of multiple vascular beds. ▲