

## Abstract Form

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| Title                    | CLINICAL ROLE OF INTRA- AND EXTRACRANIAL MR - ANGIOGRAPHY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| Text                     | <p>During the past two years the quality of MR-angiography (MRA) dramatically improved to the detection of even tiny intracranial aneurysms. MRA, however is completely different from conventional angiography (X-Ray AG), depending on intraluminal hemodynamics like Doppler sonography. In order to evaluate the accuracy in clinical routine, 200 MR-angiograms were retrospectively correlated to other diagnostic methods.</p> <p>All MRA examinations were performed on a 1.5T magnetom (Siemens, FRG) using a standard circular polarized head coil (FOV=25cm). For MRA, gradient echo sequences (FLASH and FISP) were applied either in 2D or 3D FFT. Vessel enhancement depends on inflow and flow compensating gradients, implemented into the GE sequences in slice-select and read-out direction for constant velocity. 3D acquisitions were postprocessed by a ray-tracer algorithm. If felt necessary, additional sequences with external radiofrequency pulses to presaturate undesired flow were performed. A routine MRI study consisting of T1 and T2 weighted spin-echo sequences and Doppler/Duplex sonography was available in all patients. There were 126 X-ray AGs, 92 transcranial Doppler studies and 45 surgical reports for comparison.</p> <p>196 of 200 MRA were considered of diagnostic quality, 4 studies were degraded by patient motion. 25 aneurysms were detected on MRA and confirmed by X-ray AG. 2 aneurysms smaller than 2mm in diameter were missed on MRA. 34(41) arteriovenous malformations (AVM) were diagnosed on MRA and X-ray-AG, however, MRA delineated feeder arteries incomplete in nearly all of them. 7 cryptogenic AVMs evident on MRI were missed on MRA as well as X-ray AG. In the rest of the patients, MRA was performed because of arteriosclerotic disease. MRA proved sensitive to moderate and high grade stenosis and occlusions, but there was a considerable number of false positives (n=25).</p> <p>In conclusion, a positive MRA result for aneurysm or AVM has a high level of confidence, whereas stenosis or occlusion may also be suspected in case of turbulent flow or susceptibility changes. Signal void due to turbulent flow on the other hand may help to estimate the hemodynamic significance of a stenosis. Vice versa, a negative MRA for aneurysm or AVM would not replace X-ray angiography, but normal appearing flow in the extra- and intracranial vessels can exclude major pathology. Interpretation of MR-angiograms requires dedicated knowledge of the underlying physics and hemodynamics and also variation of the different MRA-techniques interactively according to the suspected disease in the patient under examination. Routine application of MRA rises the necessity of serious education and individual examination protocols. The noninvasiveness of the method in combination with MR-imaging then will improve our diagnostic potential to the benefit of the patients and for a better understanding of disease.</p> |

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Image de synthèse URP.



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