Usefulness of three-dimensional phase contrast MR angiography on arteriovenous malformations

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Neurosurgical Review **volume 20**, pages171–176 (1997)Cite this article

Abstract

Prospective three-dimensional phase contrast (3D-PC) MR angiography was obtained in 34 patients with arteriovenous malformations (AVM) and comparison was made between digital substraction angiography (DSA) and three-dimensional time-of-flight (3D-TOF) methods. Velocity encoding (VENC) for 3D-PC was adjusted to 60 and 10 cm/sec., and was changed only when adequate information was not obtained. VENC 60 cm/sec. demonstrated the main feeders in 100 % of cases and the nidus in 86 % of cases whereas VENC 10 cm/sec. showed the draining vein in 78 % of cases. The detection rate of feeder, nidus and drainer was 60 %, 40 % and 13 % respectively by the TOF technique. The mean size of the nidus as compared with DSA as standard was 130 % with MRI,108 % with 3D-PC and 92 % with the TOF technique and this difference was not statistically significant. 3D-PC was clearly superior in detecting AVM in the presence of hemosiderin, hematoma or surgical clips. It also showed gradual disappearance of the lesion after radiosurgery We found 3D-PC superior to 3D-TOF in the diagnosis, therapeutic planning and follow-up of AVM.

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