

Images: Contrast Enhanced MR Angiography In AV Malformation of Thenar Eminence Hand

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Introduction

Contrast-enhanced angiography of the hand non-invasively provides information comparable to that provided by conventional angiography. It is a quick and easy examination that takes less than 5 minutes to perform and produces high quality images with use of dedicated surface coil that provides a high signal-to-noise ratio, allowing small pixel size and high spatial resolution. Contrast enhanced MR angiography requires

I/V injection of Gadopentatedimegolumine and acquisition of volume slab of image data from hand. The technique is generally robust with reproducible findings (2,3,4,5)

A case report

A 10-year-old girl presented with swelling in right thenar eminence since childhood. It was slowly progressing and was slightly bluish in discoloration. On examination it was soft and rubbery in consistency. No palpable thrill or audible bruit was present. Routine investigations were normal. Plain X-ray hand revealed a soft tissue swelling without any calcification in the thenar area (Fig 1a & b). Clinical diagnosis of hemangioma was considered. Plain US showed it as a hypo echoic lesion (Fig 2). Color Doppler showed the mass lesion as a highly vascular lesion (Fig 3). 3-D contrast enhanced angiography was on Gyro scan NT Intera. T1.5.B-TFE/Coronal/C sequence was obtained after AngioMST Survey to delineate the lesion properly. Sequences used for MR angiography were 3D/512, 2D BOLUS TR and 3D/512. Timing of arrival of contrast is done under real MR Fluoroscopy. Contrast used is 20ml by I/V catheter placed in antecubital vein. On BFE sequence, there was a predominantly hyper intense lesion with few hypo intense areas (Fig 4). MR angiography showed markedly enhanced sepiginous structure in relation to Radial artery in the region of interest (Fig 5). Contrast enhancement of unfused epiphyses were seen. MR Angiography confirms the diagnosis of AV

malformation.



Fig No 1 a & b X-ray Hand showing soft tissue swelling

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Fig No 2 Plain US showing hypo echoic lesion,

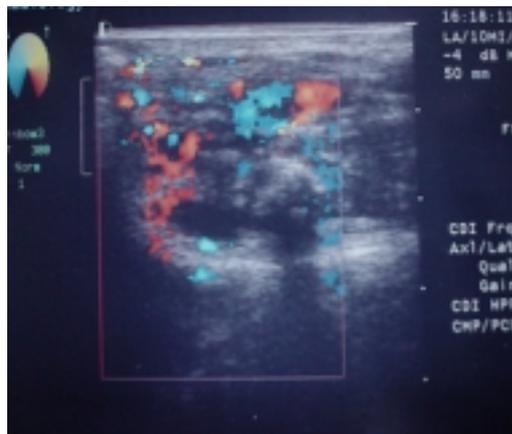


Fig No 3 Color Doppler showing highly vascular lesion

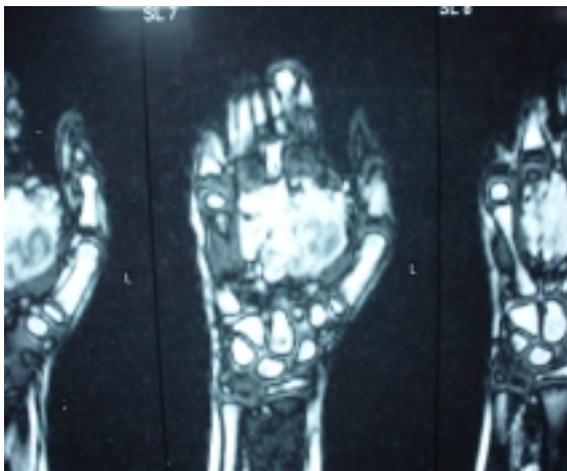


Fig No 4 BFE Sequence showing AV malformation

Discussion

Venous malformations are congenital anomalies of venous channels within skin and other organs. They are not neoplastic, and skeletal deformities may occur. They are found in 1-4% of the population and occur due to errors in embryologic formation of vascular components at 8 weeks gestation. Mutations in gene encoding for receptor tyrosine kinase are associated with some familial arteriovenous malformations.



Fig No 5 Contrast enhanced MR angiography showing AV malformation in relation to Radial artery

Arteriography is gold standard but with the advent of contrast MR angiography, the role of catheter angiography has been limited to when some intervention is to be done in the same sitting. Images obtained by MRA are comparable with conventional angiography and procedure is completely non-invasive, no complication and time required for whole procedure is less than 10 minutes (1,2,3,6). MR angiography can also differentiate venous malformations from A-V fistulas because each condition has a different treatment protocol.

Treatment includes injection of sclerosing agents like alcohol or hypertonic saline, Selective embolisation with gel foam or coils is useful in conjunction with surgical excision. Recently Argon and YAG lasers have been used for the treatment of malformation.

References

- 1 David A, Connel et al. Contrast enhanced MR angiography of the hand. *Radiographics* 2002; 22:583-589.
- 2 Yung BC, Loke TR, Chan YL. Angiomatosis of the hand demonstrated by C-E MRA. *Australas Radiol* 2000; 2:198-200.
- 3 Lee VS, Lee HM, and Rofsky NM. MRA of hand: a review. *Invest Radiol* 1998; 33:687-698.
- 4 Winterer JT, Scheffler K, Paul G, et al. Optimization of CE MR Angiography of hands with a time bolus and elliptically recorded 3D pulse sequence. *J. Comput Assist Tomogr* 2000; 24:903-908.
- 5 Rak KM, Yakes WF, Ray RL, et al. MR imaging of symptomatic peripheral vascular malformations. *AJR* 1992; 159:107-112.
- 6 Cohen JM, Weinreb MD, Rednatic. A-V malformations of extremities. *MR imaging. Radiology* 1986; 158:475-479.