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Brief Images: Cerebral arteriovenous malformation

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MeSH: Cerebral arteriovenous malformation

Cerebral arteriovenous malformations (AVM) are defined as lesions of the vasculature wherein blood bypasses the capillary system, flowing from arteries directly into veins. These lesions are congenital in nature and are caused by failure of differenciation of the embryonic vascular plexus. This direct connection exposes the low resistance venous system to abnormally pressures leading to the formation of enlarged feeding vessels, the lesion itself and enlarged venous draining vessels. Such lesions may therefore continue to enlarge postnatally.[1]

Presentation in the paediatric age group may be with heart failure, macrocephaly, frank hydrocephalus , benign intracranial hypertension or prominent scalp veins. In older individuals, presentation may be with haemorrhage (acute headache or neurological deficit), fits, chronic headaches or chronic and progressive neurological deficit/s due to mass effect and/or ischaemia of the surrounding brain due to steal.[2]

This cranial ultrasound is of an infant from a developing country, the product of a first cousin marriage, and who also, incidentally, had presented to a tertiary cardiology centre with scimitar syndrome.

Further imaging may be obtained by magnetic resonance imaging and angiography.

Treatment may be surgical; or by stereotactic radiosurgery; or by neurointerventional radiology with ischaemic obliteration of vessels with glues, particles or coils; or by any combination of the above.[3] Angiography is particularly useful for grading lesions with regard to likelihood of success with surgical intervention.[4]

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Figure 1 AVM arising from carotid artery

Figure 2 Draining vein to the inferior sagittal sinus

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Figure 3 Arterial and venous phases of AVM

Figure 4 AVM (circled)

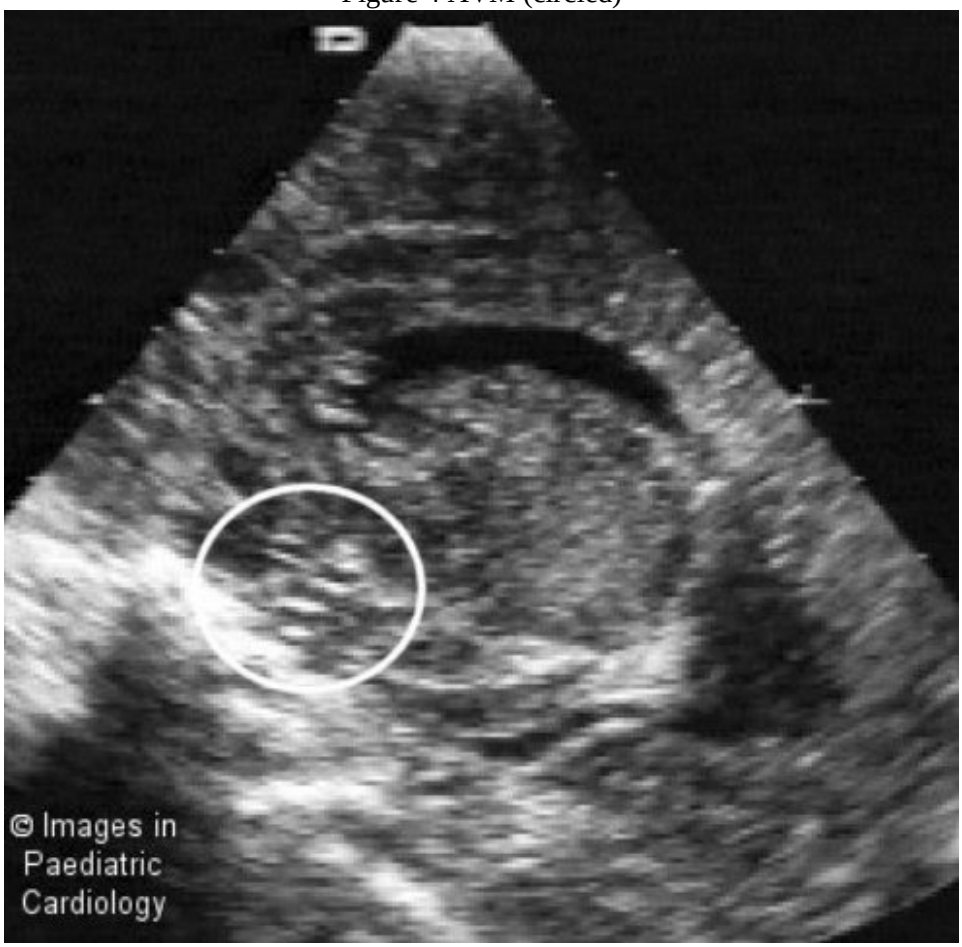
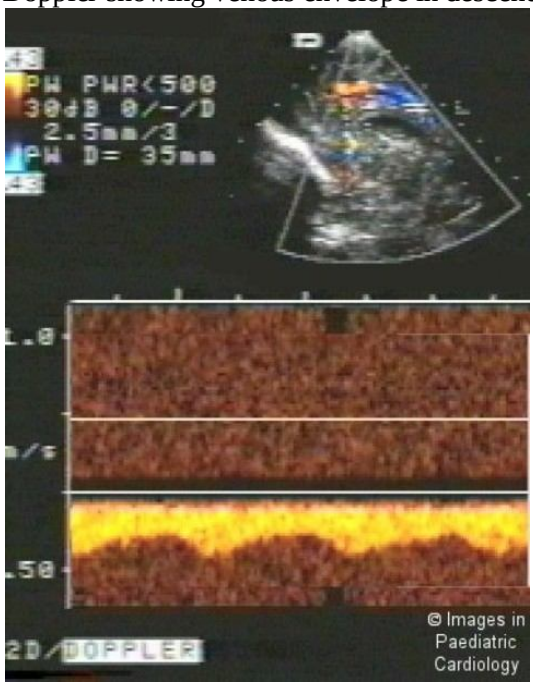


Figure 5 Pulse wave Doppler showing arterial envelope in ascending portion of AVM

Figure 6 Pulse wave Doppler at junction of venous drainage of AVM

Figure 7 Pulse wave Doppler showing venous envelope in descending portion of AVM



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