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AVM in scalp: diagnostic dilemma- a case report

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ABSTRACT:- Objectives: Diagnosis of a pulsatile mass in scalp includes history, clinical examination and imaging. In almost all cases there is a history of trauma until and unless it is present since birth. If imaging reports are not conclusive it becomes a challenge to decide the plan of treatment.
Materials and methods: Our case was a woman of 24 year, presented with a pulsatile mass in scalp which was noticed only three months earlier. She experienced sleep disturbance due to discomfort in head for pulsatile mass. She had no history of trauma to head, unconsciousness or visual disturbance. On local examination, a soft, globular, non-tender mass measuring about 3.0 X 2.5 cm was palpable over the right side of scalp in the region of parieto-occipital suture. The mass was compressible, free from underlying structure, could not be separated from overlying skin. Surface was smooth, margin ill defined, local temperature not raised. It was pulsatile, not expansile, rather transmitted. Duplex scan of the mass revealed arterial predominant AVM, but CT Angiogram reported venous malformation arising from right external jugular vein and getting venous drainage from right retro mandibular vein and facial vein. As there was diagnostic dilemma, decision was taken in favor of open surgery.

Result: Under general anesthesia excision of AVM and ligation of feeding vessels were done. It was found originating from branches of right superficial temporal artery.
Conclusion: Confusion frequently may arise while diagnosing a pulsatile scalp lesion. Clinical judgment should be most reliable to a surgeon for taking decision.

Key Words: Pulsatile Mass; Arterio-venous Malformation (AVM).

I. INTRODUCTION:

Diagnosis of a pulsatile mass in scalp includes history, clinical examination and imaging. In almost all cases there is a history of trauma until and unless it is present since birth. If imaging reports are not conclusive it becomes a challenge to decide the plan of treatment.

II. CASE SUMMARY:

A woman of 24 year presented with a pulsatile mass in scalp which was noticed three months earlier. She only experienced sleep disturbance due to discomfort in head for pulsatile mass. She had no history of trauma to head, unconsciousness or visual disturbance.

On local examination, a soft, globular, non-tender pulsatile mass, measuring about 2.9 X 2.4 cm was palpable over the right side of scalp in the region of parieto-occipital suture (Figure- 1). The mass was compressible, free from underlying structure, could not be separated from overlying skin. Surface was smooth, margin ill defined, local temperature not raised.

Duplex scan of the mass revealed arterial predominant AVM (Figure- II), but CT angiogram reported venous malformation arising from right external jugular vein and getting venous drainage from right retro mandibular vein and facial vein (Figure- III, IV, V). As there was diagnostic dilemma, decision was taken in favor of open surgery. Under general anesthesia excision of AVM and ligation of feeding vessels were done. It was found originating from branches of right superficial temporal artery.

III. DISCUSSION:

Various names being used to describe the VMs (Vascular Malformations) of the scalp include aneurysm cirsoide, aneurysmaserpentinum, aneurysm racemosum, plexiformangioma, arteriovenous fistula and AVM[1]. Arteriovenous malformation (AVM) is an abnormal fistulous connection between the feeding arteries and draining veins, without an intervening capillary bed within the subcutaneous layer.

Khodadad proposed four major etiologies causative of high-flow VM viz. Congenital, Traumatic, Infection & Inflammation, Familial[2]. The origin of the main feeding arteries of scalp AVM arises from the external carotid, occipital and supraorbital arteries. Because the face and scalp have a rich arterial network, the arterial system that supplies an AVM frequently is multiple and complex[3].

In low-flow VM (i.e., cavernoma, cavernous hemangioma, venous malformation and sinus pericranii), usually, no arteriovenous shunt is present and they are seen as well-demarcated lesions[4]. The draining veins are grossly dilated and tortuous and may show variceal dilatation[5]. The dilatation of vascular channels often results in deformity of the face and scalp[6]. Low-flow VM are usually congenital in nature. Trauma, pregnancy or hormonal change causes deterioration of the symptoms.

The low- and high-flow scalp AVMs has different management protocol. A thorough clinical evaluation for differentiation of high-flow malformation from low-flow should be done by duplex study followed by either a CT angiogram or MR angiogram and/or DSA. A high-flow AVM with large size, multiple feeders, skin changes, skin necrosis/ulceration and haemorrhage are the right candidate for surgical treatment (excision and/or ligation of feeding vessels) as it gives best chances of cure with better cosmetic result and less chance of recurrence[7]. The other treatment options include transarterial and transvenous embolization, injection of sclerosant into the nidus and electro thrombosis. Surgical excision is the most common and successful method of dealing with scalp arteriovenous malformation[8].

In our case, there was no history of trauma. The mass was pulsatile which goes in favor of arterial type and duplex confirmed that. But, CT angiogram reported the lesion as venous. To avoid the confusion arose from imaging open surgical method was chosen. The lesion was found originating from branches of right superficial temporal artery.

IV. CONCLUSION:

Confusion frequently may arise while diagnosing a pulsatile scalp lesion. Clinical judgment should be most reliable to a surgeon for taking decision.

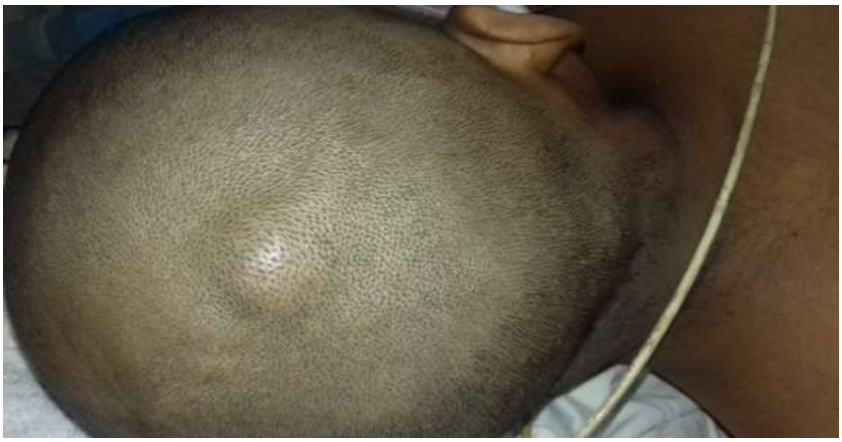

Figure- I: Swelling over scalp

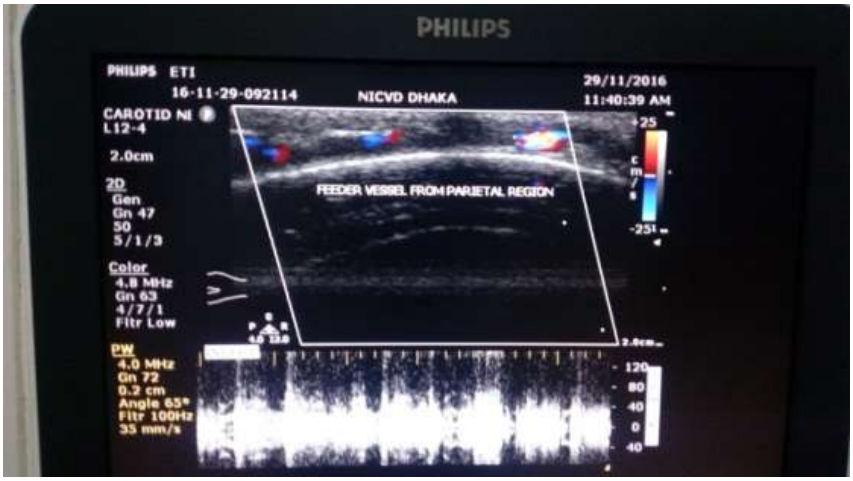

Figure- II: Duplex Scan

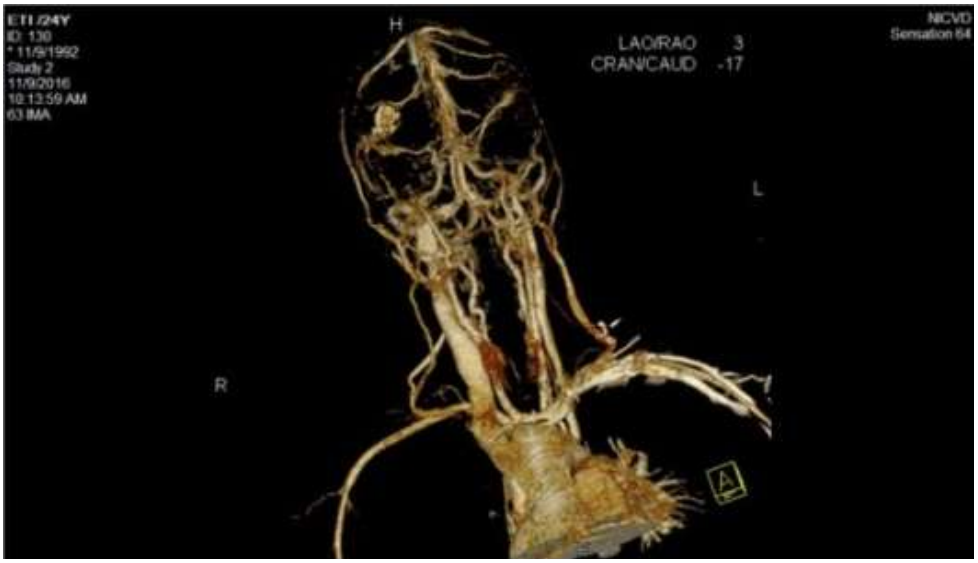

Figure- III: CT Angiogram of Arch of Aorta and Branches

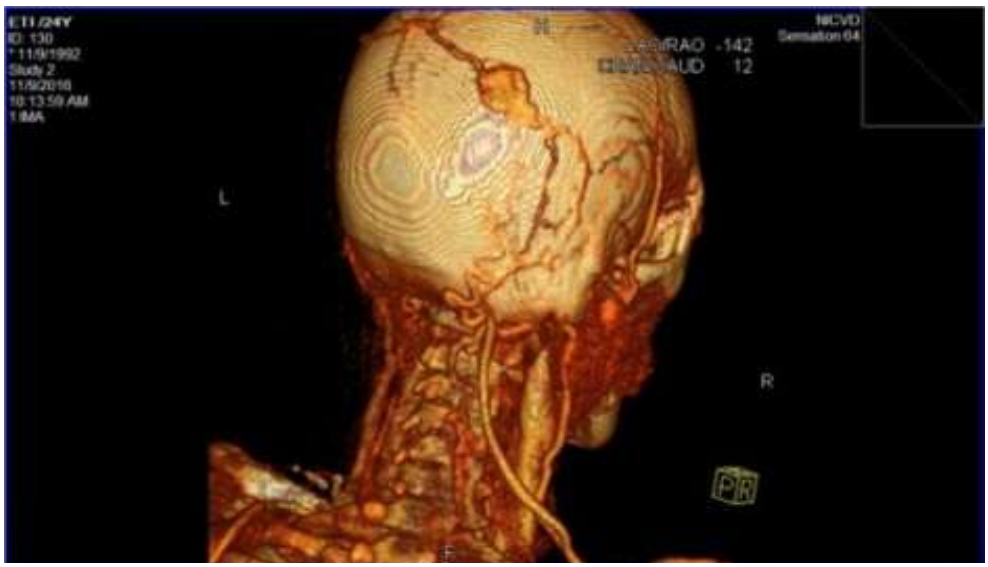

Figure- IV: CT Angiogram of Arch of Aorta and Branches

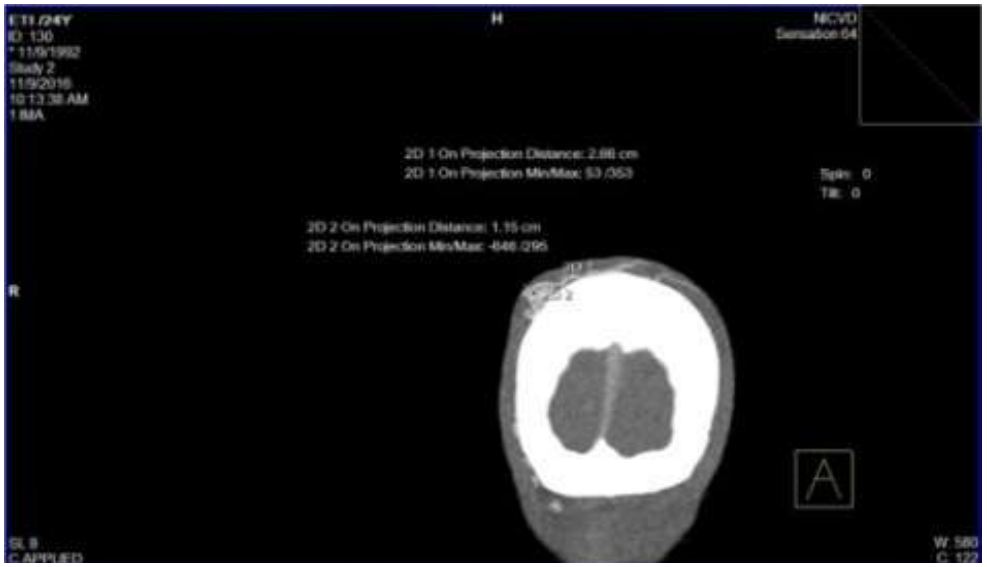

Figure- V: CT Scan of Brain (Bone Window)

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