

A Case Report on Arterio-venous Malformation in the left side of the Neck - A Diagnostic Dilemma for Surgeons

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Keywords

AV malformation; Arterio-Venous malformation; Neck swelling

Abbreviations

AVM - Arterio-Venous Malformation, CCA - Common Carotid Artery, IJV - Internal Jugular Vein, CM - Centimetre, OPD - Out-patient department.

Introduction

AVM is a congenital vascular malformation with direct communication from arteries to veins (Arterio-venous shunting) and lack of a normal capillary network; the area with abnormal vasculature and shunting is called the nidus [1]. The behaviour of peripheral (extracranial) AVM is locally aggressive [2].

Case Report

A 45-year-old gentleman driver by occupation came to our General surgery OPD with swelling in the Left side of his neck for the past 3 years (Fig 1.1, 1.2).

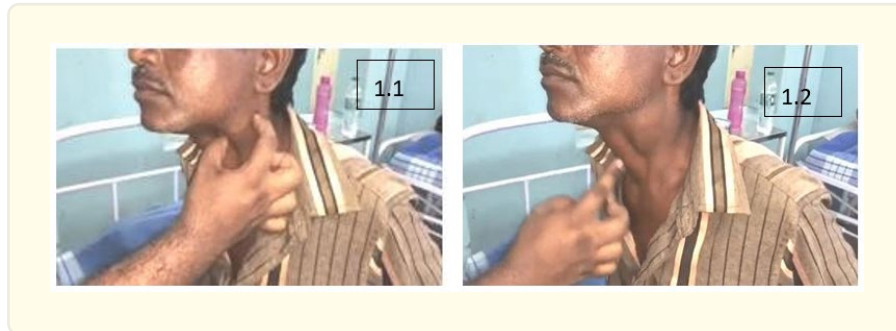
The patient was apparently normal before 3 years, following which he noticed a swelling in the left side of his neck. The swelling was insidious in onset and progressive in nature to attain the present size. The swelling was not associated with difficulty in swallowing or breathing. The swelling was neither associated with an evening rise in temperature, recurrent cough with expectoration nor contact with Tuberculosis. No history of a sudden decrease in weight or appetite. No history of similar complaints in the past.

The patient is not a known case of Type 2 Diabetes Mellitus / Systemic Hypertension / Bronchial Asthma / Tuberculosis.

No significant head & neck surgeries / Oral cavity surgeries / Head & Neck irradiation.

On Examination

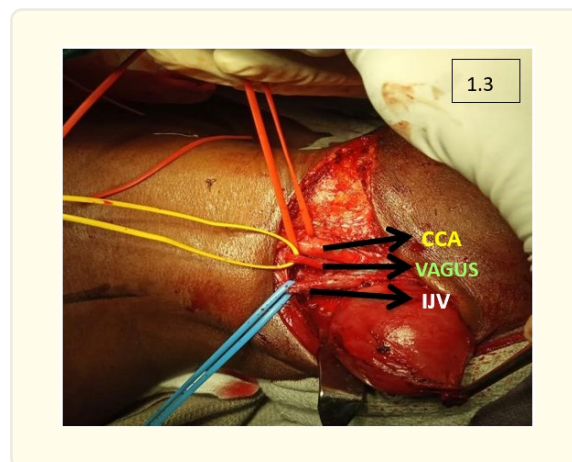
A Globular soft mobile pulsatile swelling 4*4cm is present over the left carotid triangle, displacing the left carotid medially. Transmitted pulsations were present, arousing suspicion of Glomus tumour and carotid body tumour.



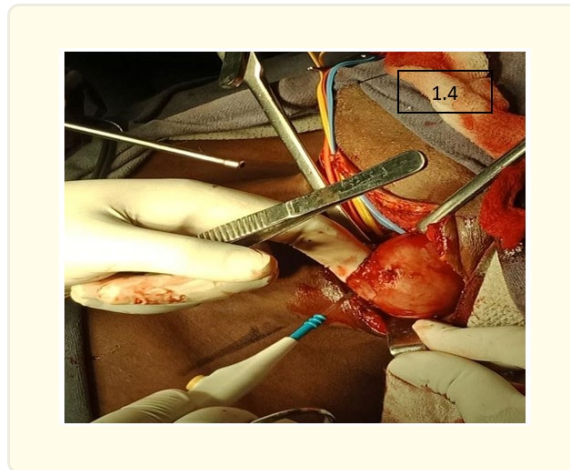
Meticulous radiological investigations were done to narrow down the possibilities. Ultra-sonogram neck revealed a hypo echoic lesion in carotid space posterior to common carotid artery and internal jugular vein with internal vascularity, arousing a suspicion of Carotid body tumour, but to our surprise carotid artery Doppler was normal, thus ruling out carotid body tumour.

Contrast enhanced computed tomography revealed a soft tissue swelling with a probability of neural origin, bringing us back to square one. With all these discrepancies in mind we planned for image guided Fine needle aspiration cytology only to find out a benign Fibro collagenous pathology.

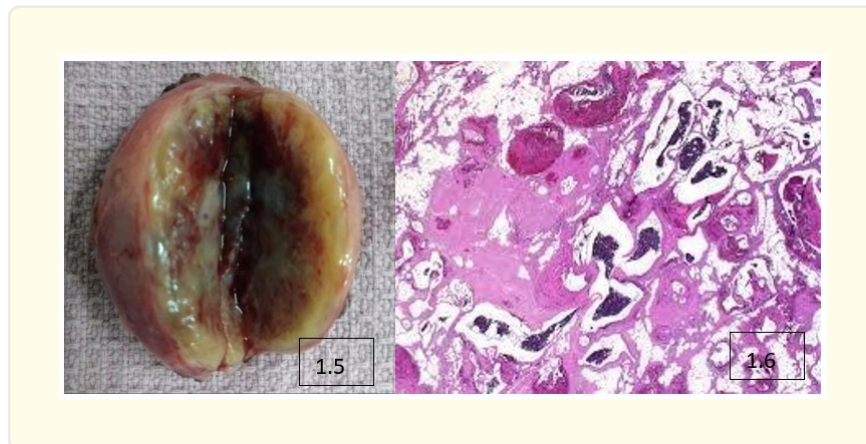
With all these blind ends, we planned and proceeded with Excision of the Swelling with Transverse neck crease incision with proximal and distal flaps to have better visualisation and vascular control (Fig1.3).



An encapsulated mass displacing the left carotid medially, without invasion of adjacent neurovascular structures was found. The lesion was meticulously dissected from the closely associated neurovascular structure without injuring the adjacent neurovascular bundle. The specimen was removed in toto (Fig 1.4 & 1.5).



The specimen was sent for Histopathological examination to conclude the diagnostic dilemma. It came out as Arterio-venous malformation with numerous communicating vascular channels (Fig 1.6).



Discussion

Arteriovenous malformations (AVM) are rare vascular lesions that can present with a myriad of clinical presentations [6]. Arterio-venous malformations are classified by international classification of disease as ICD - 10 CM.

Arteriovenous malformations (AVMs) are abnormal shunts between arteries and veins that result from disturbances in angiogenesis [7]. They are high-flow malformations that are radiographically characterized by a central nidus, a tangle of blood vessels where the abnormal arterial-venous communication exists without a normal intervening capillary bed [7]. They can arise anywhere in the body and therefore have a wide range of presentations, from an asymptomatic birthmark to a life-threatening impingement on vital structures [7].

Peripheral Arteriovenous malformations are classified based on angiographic findings as Type I, Type IIa, Type IIb, Type IIc, Type IIIa and Type IIIb [8].

Head and neck AVM are locally aggressive lesion in a delicate anatomic region and tends to recur after interventions. The most important factors in assessing the usability of any treatment method for peripheral AVM are its success in complete nidus eradication, complication rate, and long-term recurrence rate [2].

The natural course of AVMs is progressive, invasive, and destructive [9]. Vigilant observation, early treatment, and radical therapy are necessary for AVMs of the head and neck [3]. Arterio-venous malformations (AVM) of the head and neck are quite rare in contrast to low-flow vascular anomalies, but often present with significant haemorrhage or cosmetic defects. Treatment of these high-flow vascular anomalies is hazardous and has a predictably high incidence of recurrence if not managed correctly. Intervention is indicated for complications such as pain, haemorrhage, pressure symptoms, ischaemic ulceration and even congestive cardiac failure [10]. A multidisciplinary team approach is required in the assessment and treatment of these lesions, and involves preoperative angiography with super selective embolization, followed by resection of the lesion, ideally within 72 hours.

Recent advances in microsurgery and in therapeutic radiology have greatly improved the prognosis for patients with these malformations [4].

The field of vascular anomalies and their clinical management is expanding and developments in the last few years have improved the understanding of haemangiomas and vascular malformations [5]. By prompt diagnosis and management vascular anomalies can be easily treated and recurrence can be substantially reduced.

Diagnosis

We finally diagnosed the swelling as *be Type IIc Arterio-venous malformation* in the Left side of the neck.

Reference

1. Mulliken John Butler, Patricia E Burrows and Steven J Fishman. "Mulliken and Young's vascular anomalies: hemangiomas and malformations". (2013).
2. Pekkola J., et al. "Head and neck arteriovenous malformations: results of ethanol sclerotherapy". *AJNR Am J Neuroradiol* 34.1 (2013): 198-204.
3. Richter GT and Suen JY. "Clinical course of arteriovenous malformations of the head and neck: a case series". *Otolaryngol Head Neck Surg* 142.2 (2010): 184-90.
4. Erdmann MW, et al. "Multidisciplinary approach to the management of head and neck arteriovenous malformations". *Ann R Coll Surg Engl* 77.1 (1995): 53-9.
5. Fowell C., et al. "Arteriovenous malformations of the head and neck: current concepts in management". *Br J Oral Maxillofac Surg* 54.5 (2016): 482-7.
6. Yakes WF, Rossi P and Odink H. "Arteriovenous malformation management". *Cardiovascular and Interventional Radiology* 19 (1996): 65-71.
7. Lam Kenrick, et al. "Peripheral arteriovenous malformations: Classification and endovascular treatment". *Applied Radiology* 46.5 (2017): 15.
8. Kim Ran., et al. "How to Treat Peripheral Arteriovenous Malformations". *Korean journal of radiology* 22.4 (2021): 568-576.
9. Richter GT and Suen JY. "Clinical course of arteriovenous malformations of the head and neck: a case series". *Otolaryngol Head Neck Surg* 142.2 (2010): 184-90.
10. Erdmann MW, et al. "Multidisciplinary approach to the management of head and neck arteriovenous malformations". *Ann R Coll Surg Engl* 77.1 (1995): 53-9.

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