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Case Report

Anterior Mediastinal Arteriovenous Malformation Mimicker for Thymoma

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Abstract

Anterior mediastinal masses are asymptomatic until it reaches significant size and cause mass effect. Anterior mediastinal arteriovenous malformations (AVM) are rare. Here we present a case which was referred for surgical intervention for a thymoma, but it was mistaken identity and turned out to be an AVM posing intraoperative challenge. The challenge with VATS (video assisted thoracoscopic surgery) resection of AVM in the mediastinum is haemostasis control and removing the lesion in total. It is difficult to differentiate solid tumours from AVM doing routine pre-operative investigation [1].

Keywords: Video Assisted Thoracoscopic Surgery (VATS); Computed Tomography (CT)

Case Presentation

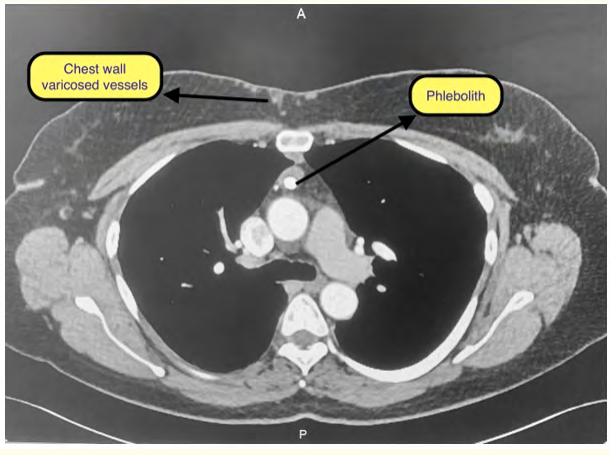
55 years old Arabian lady, presented to vascular surgery clinic 1 year ago with dilated veins in both her lower limbs and anterior chest wall. She complained of slowly progressive chest pain. History of total thyroidectomy in 2017 for benign pathology. Clinical and biochemical workup for myasthenia gravis as well as lymphoma and germ cell tumour was negative. Imaging workup with computed tomography (CT) scan showed an incidental finding of an upper anterior mediastinal mass measuring 2.3 x 2.0 x 9 cm in anterior-posterior, transverse and cranio-caudal dimensions, with large foci of calcifications within the mass, anterior chest wall dilated vessels with phlebolith, arterial and delayed contrasted phase showed no enhancement, and six months follow up interval was unchanged. Patient came abroad and underwent right VATS and thymectomy, with findings of several perithymic varicosities. Bleeding encountered was tackled with careful dissection, advanced bipolar ligature for division of the innominate vein tributaries and stapling across the base. Blood loss was 70mls and discharged home well on post operation day 4. Histopathology revealed a normal thymus with arteriovenous malformation with recent and old thrombosis.

Discussion

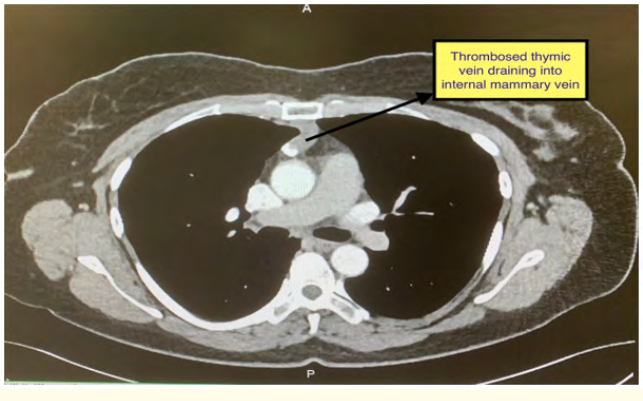
Patient was subjected to surgery without biopsy as the mass was interpreted as thymoma on imaging and deemed resectable via VATS. The issue with vascular tumour is the diagnostic evaluation for the pathology is frequently inconclusive despite multiple attempts at biopsy [2]. Imaging has ability to show vascular malformations from other benign lesions such as haemangioma, cystic hygroma, lymphangiomas, and malignancy example angiosarcoma [3]. Hence the surgeon operating on this tumour must anticipate for unexpected circumstances arising as predetermined strategizing is not possible.

CT examination plays a crucial part in diagnosis of mediastinal lesions. Thymic cavernous haemangioma which belongs to a group of vascular malformations, has features such as calcified phlebolith, complex multiple venous channels, distant feeding veins, multiple

venous lakes and delayed enhancement [4]. However, there was no enhancement in all arterial and delayed phase in this case due to total thrombosed vessel. Though CT scan offers spatial resolution and clearly demonstrates calcifications and phleboliths, magnetic resonance imaging (MRI) has more precision in projecting its extension and infiltration of the adjacent tissues [5]. The differential enhancement of vascularity with AVM presenting more intense enhancement, while venous malformations show slow but progressive enhancement [6]. Digital subtraction angiography (DSA), though its role is lesser in the era of modern CT scan and MRI, plays a role in mapping the feeder vessels and draining veins making a role for therapeutic strategy of vessels embolization facilitating surgery or avoiding it [6].

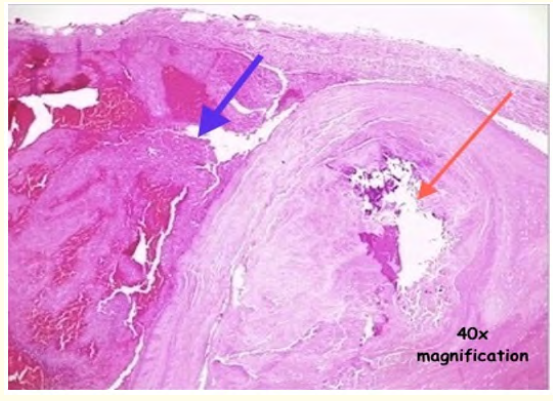


Picture 1: CT Scan showing calcification within a vessel in the thymus.

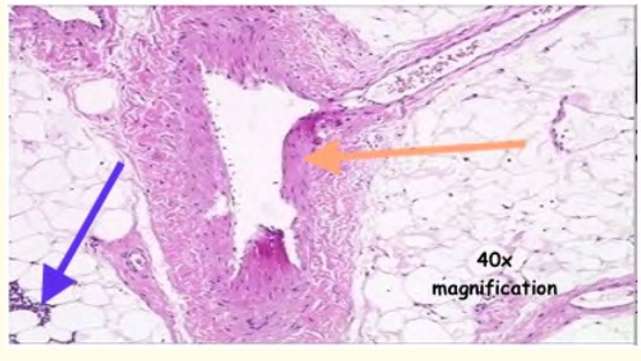


Picture 2: CT scan showing thrombosed thymic vein arising from the internal mammary vein.

ISSVA (International Society for the Study of Vascular Anomalies) has classified vascular tumours or malformations as distinct [7]. Vascular tumours are characterised by endothelial hyperplasia as originally demonstrated by Mulliken and Glowacki [8]. Vascular malformations are characterized by non proliferation of vascular channels, often ectatic, which are divided according to the involved vessels in arterial, arterioles, venous, venule, capillary and lymphatic malformations which can be pure or combined. Specifically, venous malformations are deviations in the development of the venous system caused by failures in different stages of embryogenesis. Most of them are sporadic and some have genetic familial predisposition [9,10]. From literature review mediastinal arterio-venous malformations are uncommon. Although their origin in the mediastinum is variable, a small number showed thymic origin. There has been only 10 cases of thymic so called "cavernous hemangioma" have been reported [4].



Picture 3: Thrombus composed of fibrin and foci of calcification (orange arrow). Adjacent blood vessels of varying sizes are also seen admixed with blood (Blue arrow).



Picture 4: Thick wall blood vessels lined by flattened endothelial cells (orange arrow), surrounded by thymic fat. A focus of thymic remnant is seen (Blue arrow).

The strengths of this report is rarity of mediastinal cavernous hemangioma; a bias is the lack of more detailed images such MRI to grasp the anatomy of the lesion in relation to adjacent tissues.

Conclusion

Mediastinal AVM mimicking a thymoma can be excised in total safely based on contrast enhanced CT scan. If the size of the lesion is large and suspected adhesions is challenging to the surgeon capacity, further clearer imaging and embolization will be a recommended.

Conflict of Interest

None.

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