Case report - Vascular thoracic

Unusual location of arteriovenous malformation; posterior mediastinum

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Abstract

An arteriovenous malformation is an anomaly of capillary development that results in a direct connection between branches of an artery and veins, with no intervening capillary network. Vascular malformations of the mediastinum presenting as mediastinal masses are very rare. We report a histologically proven case of a posterior mediastinal arteriovenous malformation in a 42-year-old man that was incidentally detected by chest radiography during a routine health check. We discuss arteriovenous malformation and review the literature findings.

Keywords: Arteriovenous malformations; Vascular tumors; Mediastinum; Computerized tomography

1. Introduction

Arteriovenous malformations (AVM) involving the thoracic cavity are uncommon. Most reported cases may be classified as acquired and secondary to trauma. The congenital forms are even more uncommon, and because of their extremely varied clinical presentations are frequently a diagnostic challenge [1]. Vascular malformations of the mediastinum include AVMs, hemangiomas, and lesions with rich vascular network-like angiolipomas and extralobar pulmonary sequestrations. These lesions may cause symptoms when they are infectious or when they exert pressure on neighboring structures after becoming enlarged; they can be discovered incidentally on a chest radiograph [2, 3].

Mediastinal arteriovenous malformations are caused by abnormal communications between arteries and veins, which are most commonly congenital in nature. Although these lesions are quite uncommon, they are an important part of the differential diagnosis of mediastinal masses [4]. Herein, we describe a case of a posterior mediastinum AVM in a 42-year-old man detected by chest radiography during a routine health check. To our knowledge from the literature, a few cases of posterior mediastinal AVMs have been described.

2. Case report

Our patient was a 42-year-old man with a history of hydatid cyst of the liver who had a medical therapy a few years ago. During a health check a chest X-ray revealed a right lower mediastinal mass. The patient was then referred to our clinic for surgical consultation, with a presumptive diagnosis of hydatid cyst of mediastinum.

On physical examination, the patient’s chest was clear on percussion and auscultation, but a significant bruit under the right scapular area was noted. A computerized tomography (CT) of the chest revealed a mass measuring 100 mm in diameter in the right lower and posterior mediastinum that was not enhanced after injection of contrast medium (Fig. 1a).

Blood tests were normal. Electrocardiogram showed incomplete right bundle branch block.

The patient was prepared for surgery with a presumptive diagnosis of hydatid cyst of mediastinum. Right posterolateral thoracotomy was performed. The mass was extrapulmonary in the right lower posterior mediastinum (Fig. 1b). Firstly we made an aspiration with a syringe and it was bloody. Then the cystic mass with its arterial supply from the intercostal artery and its venous return into intercostal vein was completely removed. Pathologic examination of the lesion confirmed the diagnosis of AVM, showing numerous vessels of different sizes with large arteriovenous communications and with some of the vessels being partly thrombosed (Fig. 2). His postoperative recovery was uneventful.

3. Discussion

Mediastinal congenital vascular malformations are extremely rare lesions. These lesions are usually large and diffuse, with one or multiple anomalous and tortuous feeding arteries and one or more draining vessels and may encroach or even invade vital mediastinal structures like
Fig. 1. (a) Axial computed tomography section shows a mass measuring 100 mm in diameter in the right lower and posterior mediastinum. (b) The mass was extrapulmonary in the right lower posterior mediastinum.

Fig. 2. Photomicrographs of the AVM, showing numerous vessels of different sizes with large arteriovenous communications.

the trachea or superior vena cava [3, 5]. In that case AVM was a round and well-defined mass.

AVMs may cause symptoms when they are infectious or when they exert pressure on neighboring structures after becoming enlarged; they can be discovered incidentally on a chest radiograph. Asymptomatic or mildly symptomatic thoracic AVMs have been reported involving brachiocephalic, intercostal, and internal mammary arteries [6]. In our case the patient had no symptom and it was found during a routine health check. The AVM was between intercostal artery and vein.

Cystic echinococcosis or hydatidosis is an endemic disease caused by larval forms of the tapeworm Echinococcus granulosus. Hydatid cyst remains a significant public health problem in endemic areas such as Turkey, the Middle East, South America, and Australia. Hydatid cysts may develop in any organ of the human body, most frequently in the liver (60–70%) and the lungs (20–30%). Although many uncommon locations have been reported, the disease is rarely present in the mediastinum [7]. In that case the patient had a history of liver hydatid cyst so presumptive diagnosis was a mediastinal hydatid cyst, an unusual location.

Differential diagnosis of the lesion included other vascular mediastinal tumors like hemangioma, angiolipoma, and extralobal pulmonary sequestration. Mediastinal hemangiomas are very rarely located in the mediastinum and most of them are in the anterior mediastinum. They are more often in children and they usually appear as well-defined round or lobulated masses [8]. Extralobar sequestration is usually diagnosed in the left hemithorax between the left lower lobe and diaphragm, but subdiaphragmatic, mediastinal, intrapericardial and retroperitoneal locations have also been reported [9].

The typical finding of AVMs are, the presence of large arteriovenous communications with no intervening capillary network within the lesion and the exclusive supply of the lesion from a large tortuous arterial branch originating directly from the ascending aorta [3, 4]. In our case arteriovenous communication was between intercostals artery and vein.

Surgery as a mode of treatment for pulmonary AVM carries at least the same risks as any other thoracic surgery, but when properly performed in well-selected patients has been associated with minimal morbidity and mortality, and rare postoperative recurrences [10]. But complete surgical removal of mediastinal AVMs is sometimes difficult or impossible because of encroaching the mediastinal structures and preoperative embolization is essential to reduce the blood flow in the lesions and make the operation easier, reducing the risk of bleeding during surgery [2]. In that case we removed the mass totally. There was no adherence to the mediastinal structures and there was no bleeding during the operation.

References


