



## Case Report

## Mediastinal cavernous hemangioma



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## ABSTRACT

We present a rare case of cavernous hemangioma located in the anterior mediastinum. A 26-year-old man presented with chest pain and mild dyspnea. Contrast-enhanced computed tomography of the chest showed a heterogeneous, central enhanced mass in the left side of the anterior mediastinum. A median sternotomy was performed, which revealed an elastic, firm mass in the anterior mediastinum adhering to the upper lobe of the left lung. Histopathological examination revealed cavernous hemangioma. The patient made an uneventful recovery.

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## 1. Introduction

Mediastinal hemangiomas are uncommon benign vascular tumors [1–4]. Mediastinal cavernous hemangiomas can be isolated or multifocal [5,6]. The preoperative diagnosis of these tumors is often difficult. We report a symptomatic patient with this tumor in the anterior mediastinum.

## 2. Case report

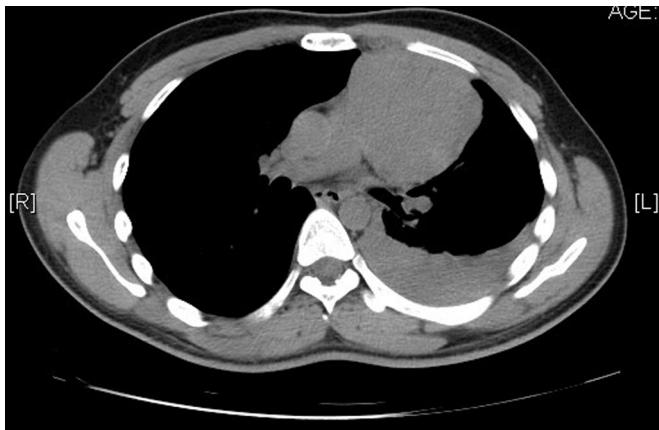
A 26-year-old man presented to the emergency department with complaints of sudden onset of left side chest pain and mild dyspnea when he woke up in the morning. The patient's medical history was unremarkable. Physical examination and laboratory data including hematological and biochemical parameters were within normal limits. A chest radiograph showed a mass in the left side of the anterior mediastinum and left side pleural effusion. Noncontrast enhanced computed tomography (CT) scan of the chest revealed a well-circumscribed ovoid soft-tissue mass, 7.6 cm in maximal diameter, in the left side of the anterior mediastinum

and left side pleural effusion (Fig. 1). Contrast-enhanced CT demonstrated heterogeneous, central enhancement within the mass (Fig. 2). A thoracocentesis was performed under ultrasound guidance and about 5 mL of bloody effusion was obtained. Tumor markers including alpha-fetoproteins (AFP), β-human chorionic gonadotropin, lactate dehydrogenase, and carcinoembryonic antigen were normal. A percutaneous fine needle aspiration biopsy of the lesion was performed under CT guidance, but it was not diagnostic.

The patient underwent a median sternotomy for tumor resection. A 9 cm × 8 cm elastic firm tumor in the left side of the anterior mediastinum with adhesion to the left upper lobe was noted, but showed no gross invasion of surrounding structures. About 200 mL of dark reddish pleural effusion was found. The gross pathological examination showed the resected specimen measuring 9.5 cm × 7.5 cm × 5.5 cm and a wedge resection of the tissue in the upper lobe of the left lung tissue weighed 240 g. On sectioning, a well-defined sponge tumor measuring 8.5 cm × 6.0 cm × 5.0 cm was seen in the thymus adhering to the lung tissue. Microscopic examination of the lesion showed irregular thin-walled or thick-walled marked dilated vascular channels with focal hyalinization fibrosis (Fig. 3). The tumor adhered firmly to the lung tissue, but there was no definite direct invasion of the lung. Histopathology of the tumor showed cavernous hemangioma. The patient has been in good condition throughout the 5 months following the operation.

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**Fig. 1.** Unenhanced CT scan shows a soft-tissue mass without calcifications in the anterior mediastinum and a left side pleural effusion.

### 3. Discussion

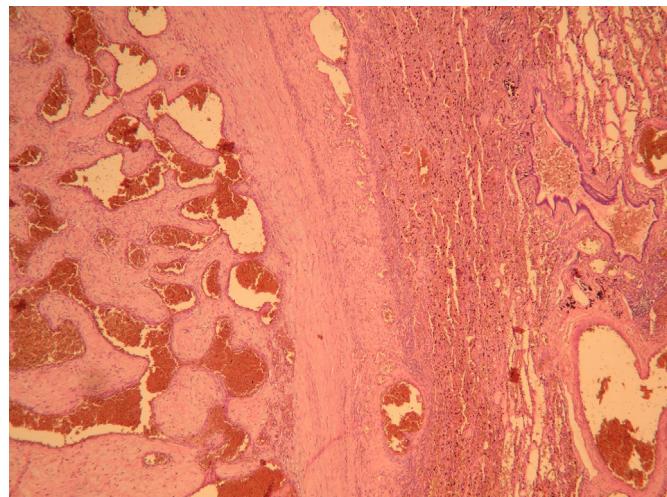
Mediastinal hemangiomas are uncommon benign vascular tumors that account for approximately 0.5% of all mediastinal tumors [1–4]. The tumors are frequently located in the anterior mediastinum, with only a few located in the middle or posterior mediastinum.

Mediastinal hemangiomas usually occur in young patients, and approximately 75% of these lesions manifest before the age of 35 years [1]. Males and females are affected with equal frequency [1,7]. Most patients are asymptomatic at presentation and diagnoses are made incidentally with imaging. Patients may present with non-specific symptoms including cough, chest pain, dyspnea, stridor, and hoarseness due to the mass effect of the tumor on adjacent organs.

Mediastinal hemangiomas are grossly well circumscribed and unencapsulated, ranging from 2 cm to 20 cm [8]. They are histologically classified into cavernous, capillary, and venous types based on the size of their vascular spaces. More than 90% are capillary or cavernous hemangiomas. Venous hemangiomas are extremely rare. Capillary hemangiomas are characterized by a lobular, solid growth pattern featuring dilated small vessels and a solid proliferation of endothelial cells [8]. Cavernous hemangiomas are characterized by large, dilated vascular spaces interposed with various stromal elements such as fat, myxoid fibroblastic proliferation, and fibrous tissue [8]. Cavernous hemangiomas do not spontaneously regress, unlike their capillary counterparts.



**Fig. 2.** Contrast enhanced CT scan shows heterogeneous, central enhancement within the mass.



**Fig. 3.** A histological section of the tumor shows blood vessels of different calibers (hematoxylin–eosin stain, magnification  $\times 40$ ).

The preoperative diagnosis of a mediastinal hemangioma with conventional radiography is difficult as the lesion usually presents as a nonspecific mass [4]. Focal phleboliths are seen in approximately 10% of cases, but when present, are a diagnostic sign of hemangioma [1,3,4,7,9,10]. Phleboliths were not observed in our patient. On unenhanced CT scans, hemangiomas are usually well-circumscribed, heterogeneous soft-tissue masses. Their appearance depends on the stromal content and degree of thrombosed vascular channels [11]. On contrast-enhanced CT scans, the tumors usually enhance heterogeneously and centrally as depicted in our patient [4,9]. Peripheral enhancement and puddling of contrast medium peripheral to the mass has been reported on enhanced CT scans [4,12]. Gradually increasing, persistent enhancement has been reported on dynamic contrast enhanced CT scans, suggesting this technique can provide valuable information for preoperative planning [13]. On magnetic resonance (MR) imaging, hemangiomas appear homogeneous or heterogeneous, and are hypointense on T1-weighted images and hyperintense on T2-weighted images [10,12,14]. The MR appearance is not specific for this type of tumor, as other masses can appear similar.

In conclusion, cavernous hemangioma is an extremely rare benign vascular tumor of the mediastinum. The preoperative diagnosis of this lesion is often difficult. Hemangioma must be considered in the differential diagnosis of anterior mediastinal tumors when phleboliths and heterogeneous enhancement within the mass are seen on CT. CT or MR imaging can provide useful information on the location and invasiveness of the tumor.

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