Venous Hemangioma Presenting as a Mediastinal Cyst on CT

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Mediastinal hemangiomas are extremely rare tumors that originate from vascular endothelial cells. It is well known that mediastinal hemangiomas appear on CT as solid masses with heterogeneous enhancement. We describe here a case of venous hemangioma, and the tumor was seen on the CT scan as a well-margined cystic mass with a fluid-fluid level in the middle mediastinum; this mass mimicked a foregut cyst or cystic lymphangioma.

Index words: Computed tomography (CT) 
Mediastinum 
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Cyst

Mediastinal hemangiomas are rare, benign vascular tumors. They account for less than 0.5% of all the masses found in the mediastinum [1, 2]. Over 90% of these tumors are cavernous or capillary hemangiomas. Venous hemangiomas in the mediastinum are extremely rare [1, 2]. The CT findings of hemangiomas that have been reported in the world literature are well-marginated solid masses in the mediastinum with a central collection of contrast material or there is heterogeneous enhancement [3-5]. Abe et al reported on a venous hemangioma that was seen as a solid mass with poor enhancement on the CT scan, which are the same findings as the other types of hemangiomas [6]. There have been no prior reports of hemangiomas presenting as a cystic mediastinal mass on CT. We report here on a surgically proven venous hemangioma in the middle mediastinum, which presented as a unilocular cystic mass with hemorrhage on the CT scan.

Case Report

A 55-year-old man with a one-week history of cough and mild dyspnea was referred to our hospital for further evaluation of the abnormal findings on his chest radiograph. The results of the laboratory data were within the normal ranges. The chest radiograph showed a large, round mass in the middle to posterior mediastinum below the hilum. The non-contrast enhanced CT showed a large, well-marginated cystic mass in the middle mediastinum between the heart and the esophagus, and the mass was causing displacement and compression of the heart and the main bronchi (Fig. 1A). The mass, measuring 11.7×5.5×7.5 cm, revealed a partly solid portion and a layer of high attenuation fluid in the other portion. Contrast-enhanced CT scans revealed a thin, peripheral rim of enhancement in the cyst...
wall (Fig. 1B). However, the partly solid portion noted on the non-contrast enhanced CT showed no enhancement. The solid portion was regarded as bloody fluid with hematoma rather than being a solid element of the hemangioma. Fiberoptic bronchoscopy showed luminal narrowing of both main bronchi, along with mucosal edema. This finding was probably the cause of the patient’s reported cough and dyspnea. The patient underwent thoracotomy for excision of the mediastinal mass to cure his dyspnea. A tense cystic mass, approximately 13 cm in size, located in the subcarinal area was found at surgery. When incised, the cyst was unilocular, with the lumen filled with hemorrhage and blood clots, and the inner wall was covered with dark blood clots. Pathological examination of the resected specimen identified a unilocular cystic mass covered with dark hemorrhagic blood clots along the internal wall. Microscopic examination revealed variable-sized, thick walled vascular spaces filled with red blood cells and organized thrombi in the cyst wall (Fig. 1C). The vessel walls were thick and composed of a single layer of endothelial cells and smooth muscle bundles. The internal solid part was confirmed to be just hematoma clots on the pathologic examination. Based on these histopathologic findings, the final diagnosis of venous hemangioma was made.

Discussion

Mediastinal hemangiomas are rare benign vascular tumors. On histological examination, these tumors are composed of large, interconnecting vascular spaces lined with flat endothelial cells, and the vascular spaces are filled with blood (3, 7). The tumors have varying amounts of interposed stromal elements such as fat, myxoid elements, strands of fibrous tissue and smooth muscle bundles, as well as focal areas of organized thrombi (3, 7). The tumors are categorized according to the size of their vascular spaces as capillary, cavernous

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**Fig. 1.** A 55-year-old man with a venous hemangioma in the middle mediastinum.

A. The non-contrast enhanced CT image obtained at the level of the left atrium shows a well-defined cystic mass with a fluid-fluid level, and the mass lies between the left atrium and the esophagus. The mass contains a high-attenuation solid element (arrow), which was revealed as hematoma at surgery.

B. The contrast enhanced CT scans depict the rim enhancement of the cyst wall (arrowheads), and there is little enhancement of the solid element.

C. Photomicrograph of the histological specimen (original magnification, ×100; H & E stain) shows thick-walled vessels that are composed of smooth muscle bundles, and a single layer of endothelial cells lines the vascular lumen.
The appearance of an esophageal duplication cyst on CT is identical to that of bronchogenic cysts except that the wall of the lesion may be thicker and the cyst's wall may be in more intimate contact with the esophagus [8, 10]. Esophageal duplication cysts sometimes present as a near solid mass or a highly attenuated cyst on CT because the ectopic gastric mucosa in the cyst may cause hemorrhage. For a cystic lymphangioma, even though the common CT findings for lymphangiomas are a smoothly margined cystic mass with homogeneous low attenuation that's similar to water, they may manifest unusual features that include higher attenuation, or the combination of fluid, solid tissue and fat [8, 11].

In conclusion, we suggested that despite their rarity, venous hemangiomas should be included in the differential diagnosis of cystic masses, and especially when finding high density cysts or complicated cysts in the mediastinum.

References

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Abstract

A 48-year-old woman was referred for CT to evaluate a mediastinal cyst that had been incidentally discovered on chest radiograph. CT demonstrated a large, well-defined, cystic mass in the anterior mediastinum. It was isodense with soft tissue on unenhanced images and showed progressive enhancement with contrast material. The lesion was located between the right and left atria. The final diagnosis was that of a venous hemangioma. CT 486 486