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Venous Hemangioma Presenting as a Mediastinal Cyst on CT[1]

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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 of the CT scan as a well-marginated 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
Neoplasms
Angioma, cardiovascular system
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

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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

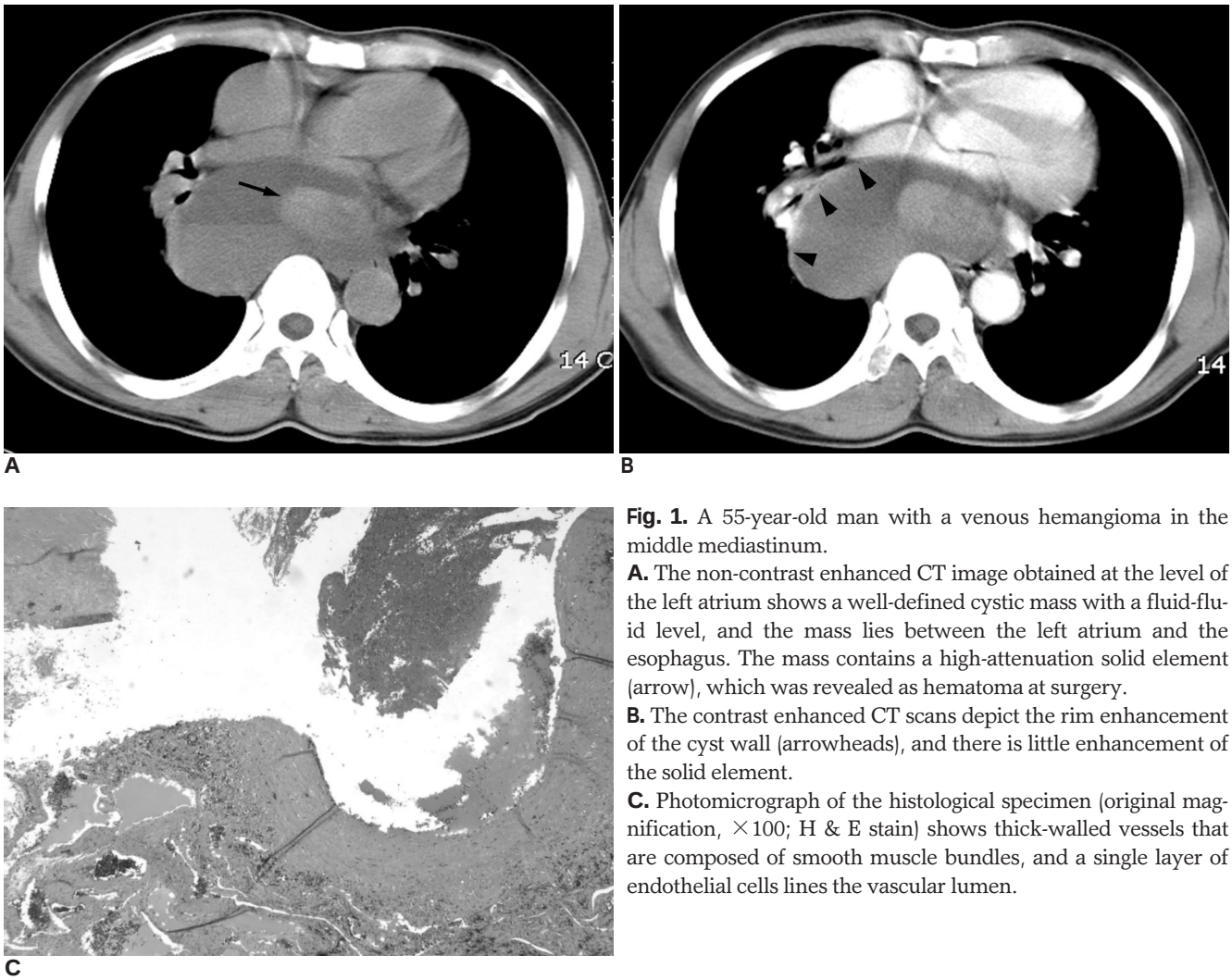

Fig. 1. A 55-year-old man with a venous hemangioma in the middle mediastinum.
A. The non-contrast enhanced CT image obtained at the level of the left atrium shows a well-defined cystic mass with a fluid-fluid level, and the mass lies between the left atrium and the esophagus. The mass contains a high-attenuation 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.

and venous hemangiomas (3, 7). Over 90% of these tumors are cavernous or capillary hemangiomas, with venous hemangiomas having been described on only extremely rare occasions.

Several published reports have described the CT findings of mediastinal hemangiomas. In the reports on cavernous and capillary hemangiomas, the common CT findings of mediastinal hemangiomas are well-circumscribed solid tumors that are heterogeneous on both unenhanced and enhanced CT scans. Central pooling of contrast material is sometimes noted (3 - 5, 7). Almost all hemangiomas are located in the anterior and posterior mediastinum.

In our case, the mediastinal hemangioma is unique in that it appeared as a cystic mass. Although there are reports that some mediastinal hemangiomas are poorly enhanced tumors on contrast-enhanced CT, mediastinal hemangiomas are solid masses and they are not cystic masses. There have been no prior reports of mediastinal hemangiomas presenting as a cystic mass on CT. Moreover, our description of the CT findings of venous hemangioma has been preceded only by Abe et al, who reported on a lesion that presented as a well-defined solid mass in the anterior mediastinum, and it showed enhancement after administration of gadolinium (6).

The cystic mass found in our case showed a partly solid portion and higher attenuation in the other portion of the cyst, with a fluid-fluid level being observed on the pre-contrast CT scan. When the mass was incised at surgery, we found only bloody fluid and clots within the mass. We also discovered only hematoma within the mass on the pathologic specimen. The presumption is that the partly solid portion and the layer of high-attenuation were due to hemorrhage and hematoma rather than to a solid element of the hemangioma. We can guess that a solid hemangioma might eventually change to a cystic mass due to extensive hemorrhage.

The differential diagnosis of a mediastinal cystic mass on CT includes bronchogenic cyst, esophageal duplication cyst and cystic lymphangioma. Bronchogenic cyst typically manifests as sharply marginated, middle mediastinal masses with attenuation equal to water on CT scans (8). However, as many as one-half of all bronchogenic cysts may appear solid and even hyperattenuated, with a fluid-fluid level on CT because of the intracystic hemorrhage, protein or mucoid material (8, 9). 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 marginated 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.

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CT 상 낭종성 종괴로 발현한 종격동의 정맥성 혈관종[1]

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종격동의 혈관종은 혈관의 내피세포에서 발생하는 질환으로 매우 드물며, CT 상 대부분 고형성 종괴로 보이며, 내부로 불규칙한 조영 증강 양상을 나타내는 것으로 잘 알려졌다. 저자들은 기존에 보고된 소견과는 달리 흉부 CT 상 중 종격동에 액체 - 액체층을 갖는 낭성 종괴로 발현되어 전장낭종이나 림프관종과 유사하게 보였던 정맥성 혈관종을 보고한다.