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CT Appearance of Cardiac Hemangioma:

Case Report[1]

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Cavernous hemangioma is an uncommon benign tumor, with rare cardiac involvement. We encountered a patient with dyspnea in whom a cavernous hemangioma was located in the myocardium of the left atrium, and in whom preoperative CT demonstrated a well-demarcated mass attached to the left atrium. During the arterial phase, speckled enhancing foci were seen, and delayed-phase CT images depicted dense peripheral enhancement, similar to that of adjacent vessels. Mass resection of the tumor resulted in a satisfactory clinical course during the two-year follow-up period. We report this case, describing its preoperative CT findings.

Index words : Hemangioma
Computed tomography (CT)
Heart, neoplasms

Primary tumors of the heart are very rare (1), and 80% are benign. Cardiac hemangiomas are extremely rare, constituting only 2.8% of primary cardiac tumors (2), and despite advanced imaging techniques, exact preoperative diagnosis is still difficult. To our knowledge, a number of case reports have described the imaging findings of cardiac hemangiomas (3 - 5), and we describe a further case, detailing the dual-phase dynamic CT findings.

Case Report

A 48-year-old man presented with mild dyspnea, first experienced four months earlier.

Chest radiography revealed a round retrocardiac mass shadow (Fig. 1A), and to elucidate its natures, dual-phase helical chest CT of the region between the thoracic inlet and the diaphragm was performed using the following parameters: 120 kVp, 200 mA, 8-mm beam collimation, 0.75 sec gantry rotation time, 12 mm table feed per rotation, and an 8-mm reconstruction interval. Each CT phase lasted 24 seconds at deep inspiration during a single breath-hold. A bolus of 100 mL of iodinated contrast material, 68% iopromide (Ultravist 370; Schering AG, Berlin, Germany), was injected through the antecubital vein at a rate of 3 mL/sec.

Early arterial-phase CT performed 20 seconds after starting the injection of contrast medium depicted a 6 x 4 cm well-demarcated soft-tissue mass attached to the left atrium (Figs. 1B, 1C) and containing speckled enhancing foci (arrowhead). Demarcation between the mass and adjacent structures such as the esophagus or pericardium was not, however, clear.

Delayed-phase CT was performed with a scan delay of 80 seconds and the same parameters used during the arterial phase. The images obtained demonstrated dense

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peripheral enhancement (Figs. 1D, 1E), similar to that of adjacent vessels, a finding which may help distinguish cavernous hemangioma from other soft tissue tumors at CT.

To evaluate cardiac function, two-dimensional echocardiography was performed, demonstrating decreased systolic function of the left ventricle. The calculated ejection fraction had decreased to 32%. The results of blood tests, esophagography, and esophagoscopy were all within normal limits. The preoperative differential diagnosis included Castlemann 's disease, localized fibrous tumor of the pleura, neurogenic tumor, and esophageal leiomyoma.

Exploratory thoracotomy revealed the presence of a 6 ×5×4-cm encapsulated mass, which was excised by means of autopericardial patch repair. The mass was hypervascular and attached to the postero-inferior wall of the left atrium (Fig. 1F). The histological diagnosis was cavernous hemangioma (Fig. 1G).

The postoperative course was uneventful. During the two-year follow-up period, the patient remained asymptomatic, and echocardiographic examinations showed no evidence of recurrence.

Discussion

Cavernous hemangioma is an uncommon neoplasm. It occurs most commonly in the liver, though also in skeletal muscle, bone, the salivary glands, the spleen, and, rarely, the heart (6). The symptoms, clinical course, and prognosis of a cardiac cavernous hemangioma depend on the location and size of the mass. In the heart, a tumor may arise from any part of the pericardium, myocardium, or ventricular cavity (7). A subendocardial location is, however, most frequent (8), and though a single, sessile or polypoid mass varying between 2 mm and 3.5 cm in diameter is usual (8, 9), one that is multiple or pedunculated is also possible (10). These tumors are

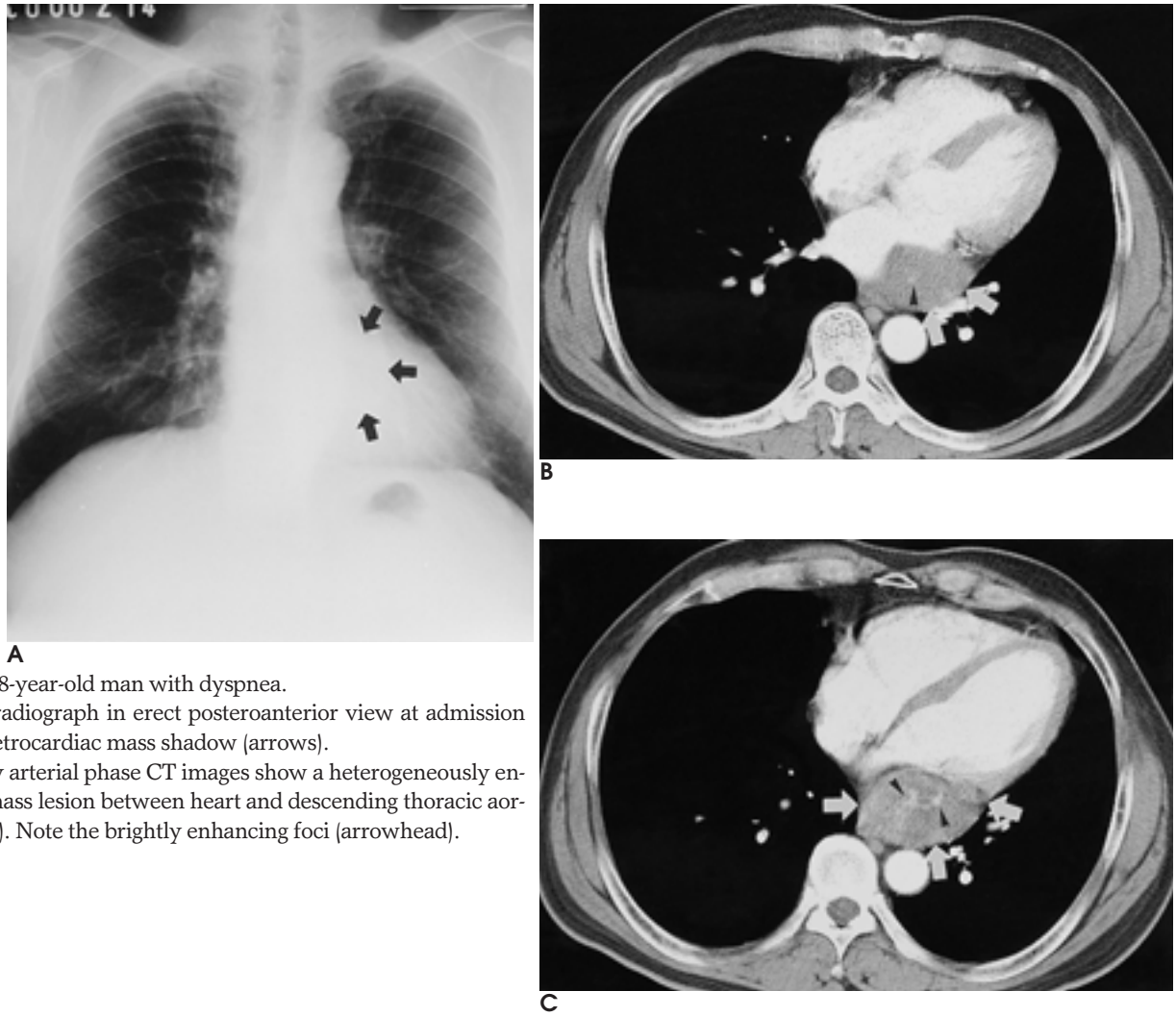

Fig. 1. A 48-year-old man with dyspnea.
A. Chest radiograph in erect posteroanterior view at admission shows a retrocardiac mass shadow (arrows).
B, C. Early arterial phase CT images show a heterogeneously enhancing mass lesion between heart and descending thoracic aorta (arrows). Note the brightly enhancing foci (arrowhead).

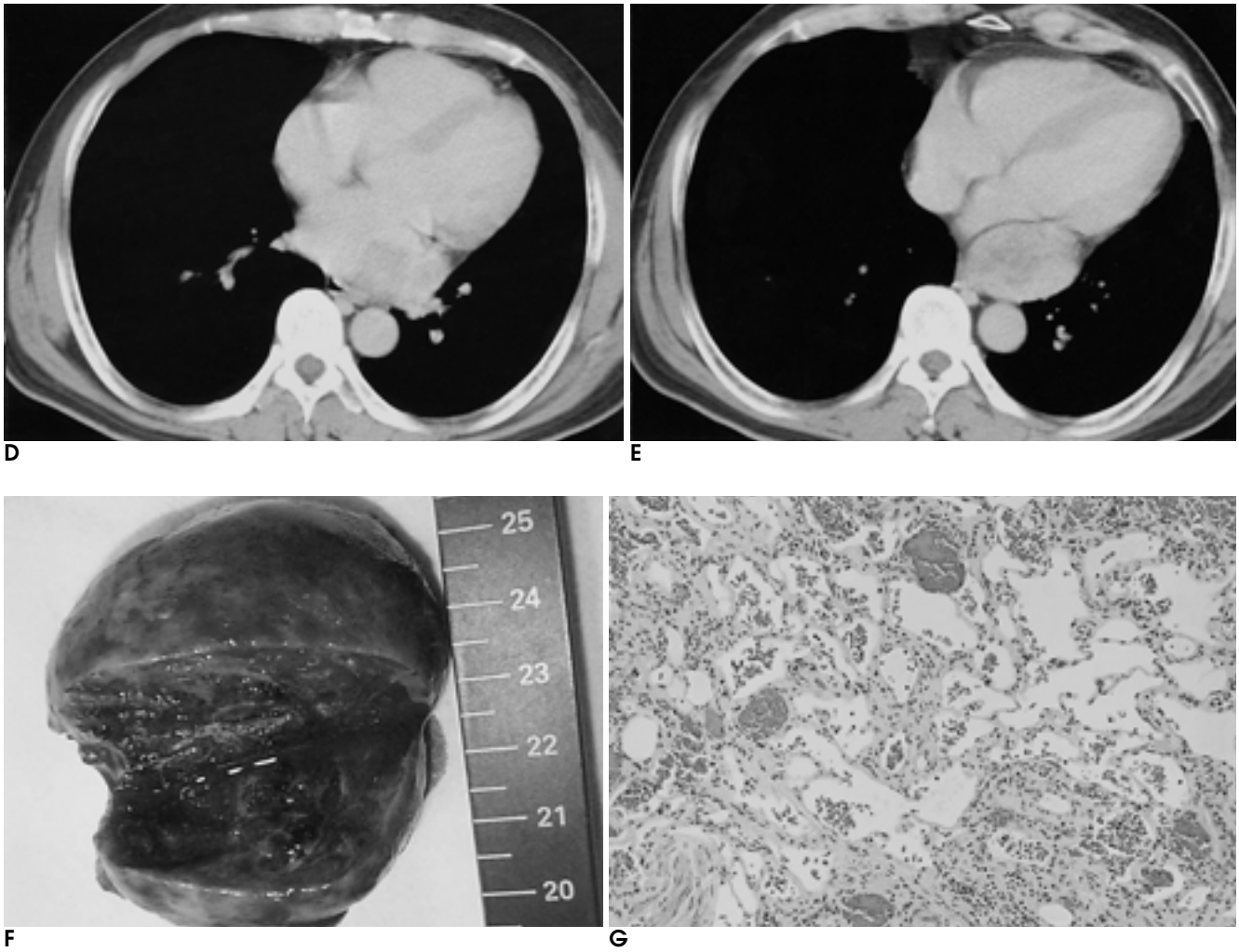

Fig. 1. D, E. Delayed phase CT images show a well-demarcated mass with dense peripheral enhancement.
F. Transverse section through the pedicle of the resected tumor specimen shows multifocal hemorrhagic foci separated by fibrous septa.
G. Photomicrograph of resected specimen shows numerous arterioles embedded in a loose fibrous stroma. This appearance is pathognomonic with cavernous hemangioma.

usually well defined and not extensive, and histologically, are distinguished by the formation of large, cavernous vascular spaces embedded in scant connective tissue stroma (8). A mass may exhibit central necrosis and calcification (10, 11).

Symptoms are related to a tumor 's location. The most frequent is dyspnea on exertion (8), as in our case, though patients are occasionally asymptomatic. Pericardial effusion may be associated, and in previously reported cases (10, 11), physical examination has revealed arrhythmia, systolic murmurs, and hepatomegaly or ascites due to congestive heart failure.

In some cases, cardiac catheterization or two-dimensional echocardiography has been used for the diagnosis of cavernous hemangioma of the heart (8), though CT is more useful. At CT, a cavernous hemangioma demonstrates peripheral or diffuse contrast enhancement, similar to that of adjacent vessels or muscle (3, 6), and there may be several small foci of calcification (3). In our case, early arterial-phase CT images depicted a heterogeneously enhanced mass lesion between the heart and descending thoracic aorta. Well-enhanced speckled foci were apparent, and the mass and adjacent structures such as the esophagus and pericardium were not clearly demarcated. In addition, the margin of the mass and the wall of the left atrium were sometimes indistinct. Delayed-phase CT images demonstrated dense peripheral enhancement very similar to that of adjacent vessels.

The only successful approach to the complete treatment of cardiac cavernous hemangioma is surgical excision, though lesions may be so extensive that resection

is impossible. In such cases, the prognosis is usually poor (8).

In conclusion, a cavernous hemangioma is a very rare benign primary cardiac tumor. In the case we describe, for which we detail the CT findings, the lesion appeared at early arterial-phase imaging as a speckled enhancing mass attached to the left atrium, and at delayed-phase imaging, dense peripheral enhancement was observed. In a patient in whom these findings observed, a diagnosis of cardiac cavernous hemangioma is suggested.

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심혈관종의 CT 소견: 증례 보고[1]

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심 혈관종은 매우 드문 양성 심 종양이다. 저자들은 호흡 곤란을 주소로 내원한 환자에서 좌심방의 심근에 발생한 해면 혈관종을 경험하였다. 수술 전 조기 동맥기 CT에서 내부에 반점양 조영 증강의 병소를 갖는 좌심방에 부착된 경계가 좋은 종괴가 보였다. 지연기 CT에서는 주변의 혈관과 비슷한 정도의 강한 주변부 조영증강이 보였다. 종양 절제 후 2년 동안의 추구 관찰에서 환자의 임상 경과는 이상이 없었다. 저자들은 수술전 CT 소견과 함께 이 증례를 보고하고자 한다.