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Epicardial Cyst Originating from Right Ventricle

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Pericardial cysts are reported by some authors, but epicardial cysts are extremely rare. We report one case of epicardial cyst that was detected incidentally and was removed successfully. Furthermore, unusually, pathological examinations confirmed that the cyst wall was looked like a vessel wall.

Key words: 1. Pericardial cyst
2. Mediastinal tumor

CASE REPORT

A 64-year-old female who had hypertension was admitted with a growing asymptomatic mediastinal mass that was detected incidentally through a medical checkup. The mass had increased in size and appeared to be about twice as large as it had been 2 years earlier according to the chest radiographs. Chest radiography showed a round mass in the middle mediastinum abutting with the left cardiac border (Fig. 1A). The blood pressure was 125/79 mmHg and the heart rate was 80 beats/min without any cardiac murmurs and with clear breathing sounds. Laboratory tests including a complete blood cell count, electrolytes, chemicals, and coagulation tests were unremarkable. Her electrocardiography showed a normal sinus rhythm. On 2-dimensional echocardiography, the large cystic mediastinal mass (5.0×4.7 cm) was adjacent to the main pulmonary artery. Computed tomography (CT) showed a 5-cm well defined homogenous enhancing mass attached to the anterolateral wall of the left ventricle and mildly compressing the main pulmonary artery (Fig. 1B). Although the left anterior descending coronary artery was displaced posteriorly by the mass, the reconstructed CT image revealed that it had no significant narrowing (Fig. 1C). Magnetic resonance imaging (MRI) showed a mildly enhancing cystic lesion with heterogeneous signal intensity on tumor 1 (T1), and tumor 2 (T2) images suggesting the possibility of a neurogenic tumor such as schwannoma with hemorrhagic degeneration (Fig. 1D).

A median sternotomy was used and we could see the mass was attached to the epicardium of the right ventricle after pericardiotomy (Fig. 2). Dissection of the mass was difficult because of severe adhesion and proximity to the left anterior descending coronary artery. We decided to apply cardiopulmonary bypass because of a risk of perforation of the right ventricle. The ascending aorta and single right atrial cannulation was used. Except for the right ventricular adhesion, excision of the mass along the layer was simple. The cyst was connected to the epicardium through a feeding vessel. During dissection of the mass, the feeding vessel was cut accidentally, and the mass collapsed immediately. The mass was filled with a blood-like fluid. After ligation using double silk tying and clipping, the cystic mass was

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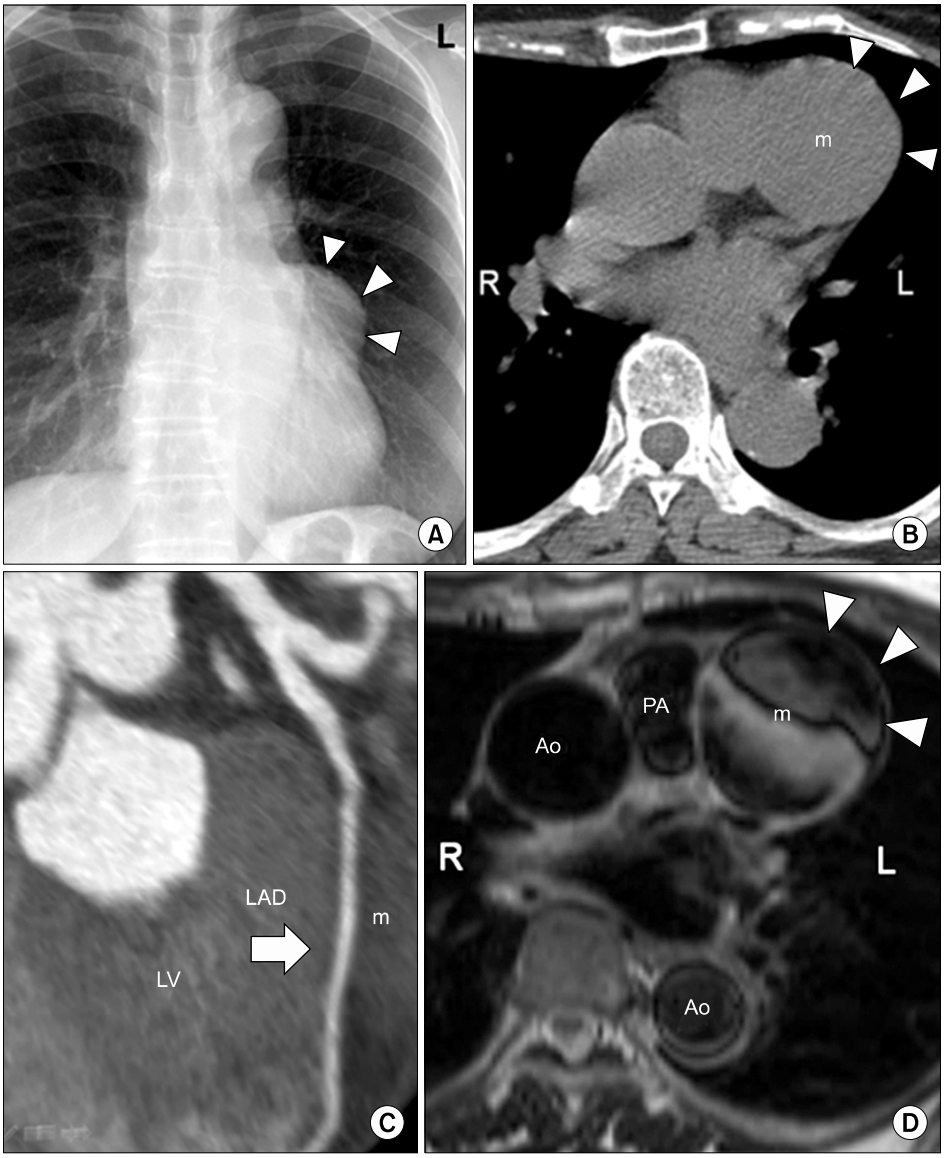

Fig. 1. (A) Chest radiograph showed a round mass in the middle mediastinum abutting with the left cardiac border. (B) Computed tomography (CT) showed a 5-cm well defined homogenous enhancing mass (m) adjacent to the anterior wall of the left ventricle (LV) and mildly compressing the main pulmonary artery (PA). (C) A reconstructed CT image revealed a posteriorly displaced left anterior descending coronary artery (LAD) next to the mass without significant narrowing. (D) Magnetic resonance imaging showed a mildly enhancing cystic lesion (m) with heterogeneous signal intensity on T1 and T2 images. Ao, aorta; T1, spin-lattice relaxation time; T2, spin-spin relaxation time.

removed.

The gross pathologic specimen was a unilocular cyst (5.5×5×2.8 cm) of which the outer surface was yellowish white with multifocal hemorrhage and the inner surface was yellowish white with multiple yellowish pigments without a solid portion. A microscopic section showed membranous fibrous tissue with calcification and histiocytic infiltration (Fig. 3) that looked like a vessel wall with atherosclerotic changes. The patient was discharged on the 6th post-operative day without any complications. The follow-up 2-dimensional echocardiography did not show any other abnormalities.

DISCUSSION

A pericardial cyst is an uncommon benign mass occurring in 1 in 100,000 and first reported by Leroux in 1959. Furthermore, such cysts originating from epicardium are extremely rare and there are no data on the incidence of epicardial cyst [1].

Most pericardial cysts are asymptomatic and are found incidentally on chest radiographs. Seventy percent of pericardial cysts are located at the right cardiophrenic angle, 22% are at the left, and the rest are in the anterior or posterior mediastinum [2]. However, in our case, the cyst was located in the

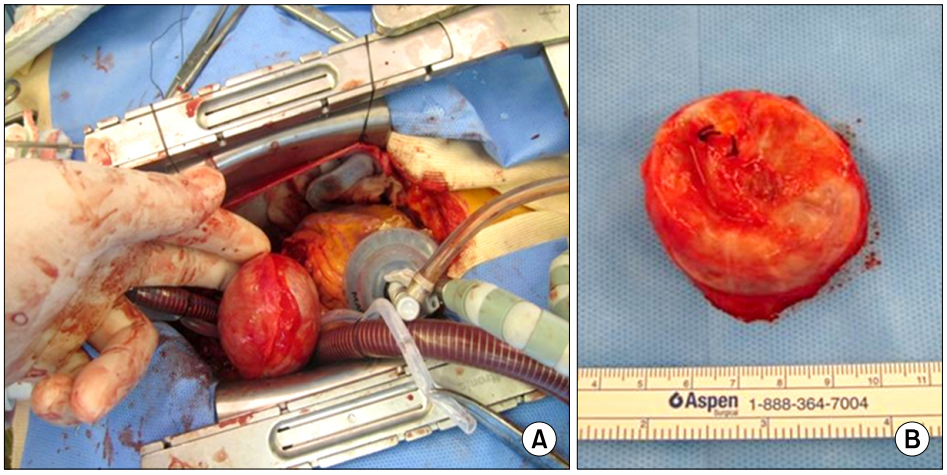

Fig. 2. (A) The mass was attached to the epicardium of the right ventricle. There was a feeding vessel from the epicardium. (B) The mass was 5.5×5×2.8 cm sized unilocular cyst.

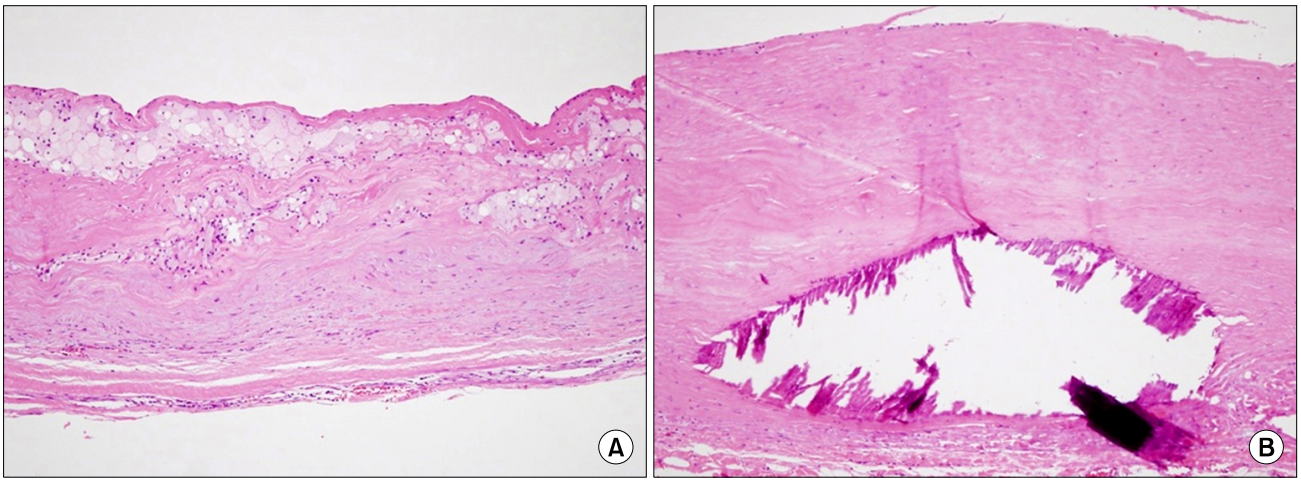

Fig. 3. (A) Microscopic section showed histiocytic infiltration and inflammatory cells infiltration. (B) Calcification was shown in the thick fibrous wall (H&E, ×100).

middle mediastinum abutting with the left cardiac border. In our case, the cyst appeared to be a mass before surgery. Many authors have noted that solid tumors, such as bronchogenic cyst, lymphoma, neurogenic tumor, teratoma, and pericardial fat tissue, should be considered in the differential diagnosis [3].

Mediastinal cysts, in which attenuation is near water density (0 to 20 HU), appear to be homogeneous mediastinal masses on CT, but pericardial cysts have a higher density (30 to 40 HU) [4]. Our case had a density of 34 HU in precontrast images, and 84 to 90 HU in enhancement images. In MRI, the mass showed heterogeneous high signal intensity compared with muscles in T2 images, and low signal intensity in T1 images. Therefore, we expected to find a neurogenic tumor with hemorrhagic degeneration before surgery.

We could not obtain diagnostic confirmation of the cyst by pathology because the cyst was of the most unusual character we have ever seen. Usually, a pericardial cyst is composed of a single layer of flat or cuboidal mesothelium containing clear, yellowish fluid [5,6]. However, our cyst did not have a mesothelial lining and contained blood-like material. We concluded that this could have been the result of a cystic change or aneurismal change of a vessel because there was histiocytic infiltration and inflammatory cell infiltration with calcification in a thick fibrous wall. On the other hand, the cyst had no smooth muscle bundles, as would be seen in a vessel

wall. Thus the mass was clinically diagnosed as epicardial cyst.

We faced some limitations in proving that the diagnosis of the cyst. If we had coronary angiography, we could rule out coronary artery anomalies. In addition, it was not possible to do a fluid analysis of the fluid inside of the cyst.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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