

The TEE is a useful diagnostic tool for assessing cardiac function and identifying abnormal findings in surgical patients [5]. When the patient's hemodynamic condition deteriorated, we performed TEE immediately and readily detected the hematoma behind the left atrium. Furthermore, findings on TEE and computed tomography led us to believe that the hematoma may have resolved with pleural drainage alone, which turned out to be what occurred.

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Right Ventricular Metastatic Choriocarcinoma Obstructing Inflow and Outflow Tract

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We operated on a 34-year-old man with a metastatic tumor that extended from the tricuspid valve to the pulmonary valve and obstructed the right ventricle inflow and outflow tracts. The tumor was removed with preservation of the tricuspid valve. Additional chemotherapy was carried out according to the BEPO (etoposid, cisplatin, bleomycin, vincristin) scheme. Histology revealed metastasis of a choriocarcinoma originating from the right testis. Computed tomography performed after 6 months detected no metastases in the lungs. Magnetic resonance imaging showed a thickened right ventricle free wall and apex. The patient is doing well 18 months postoperatively.

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Diagnosis of cardiac neoplasms has been greatly facilitated by two-dimensional echocardiography (ECHO) [1], and magnetic resonance imaging (MRI) and computed tomography (CT) were also useful in some selected cases. Metastatic or secondary tumors of the heart are far more frequent than primary tumors of the heart [2]. Cardiac expression of a noncardiac primary tumor is rare, and only about 10% of them are due to intracavitary or intramyocardial involvement [1]. The metastases of the choriocarcinomas into the heart are extremely rare cases and appear in the literature sporadically [3, 4, 5]. They sometimes present themselves in a very bizarre fashion [6], such as myocardial infarction due to metastatic choriocarcinoma of the heart [3].

The location of the cardiac neoplasms in the intramyocardial mass of the right ventricle is generally an exception, and even in those cases that are reported, patients typically die during diagnostic procedures or soon after the operation. We report a case of a young man with metastatic choriocarcinoma (originating in right scrotum) to the right ventricular free wall, spreading into the right ventricular outflow tract, between the tricuspid valve and its supporting structures into the right atrium, obstructing blood flow to the pulmonary artery and causing tricuspid valve insufficiency.

The 34-year-old patient was admitted to the general hospital for 2 months of dyspnea on exertion and fatigue. The admitting physician heard a galloping rhythm and systolic murmur, with the point of maximum over the pulmonary valve. The electrocardiogram showed signs of right ventricular strain; the roentgenogram heart-lung investigation revealed an increased heart silhouette.

ECHO heart examination revealed a tumor mass in the enlarged right ventricle obstructing the right ventricular inflow and outflow and extending from the tricuspid valve to the pulmonary valve, filling the entire ventricle and outflow tract. In the laboratory findings, only LDH was increased.

Due to the risk of complete flow interruption in the right heart, the patient was transferred to the intensive care unit (ICU) at a tertiary institution. CT of the thorax revealed round lesions in the lung parenchyma (five lesions of 2 mm to 1 cm); on contrast investigation, the growth in the heart appeared partially vascularized. Abdominal ultrasound detected minor ascites, a small and swollen gallbladder, a right kidney reduced in size and a compensatorily enlarged left one, and no enlarged lymph nodes.

The patient subsequently stated that his right scrotum had been enlarged for as long as 4 months where a small induration was palpable. Ultrasound testicular investigation detected the following: on the left, a hydrocele and a somewhat thickened spermatic cord; in the testicle itself, an unclearly defined hypoechogenic region with calcinations.

After consultation with the oncologist in charge, blood was drawn for beta HCG and AFP, and after receiving the results (beta HCG 5,012 IU/mL, AFP 273 IU/mL), chemotherapy was introduced on the same day according to the



Fig 1. Before the procedure, an MRI of the heart was done to discern possible thrombotic masses from tumor tissue. Spin echo magnetic resonance in transversal plane after contrast (gadolinium) administration: moderate contrast enhancement of tumor mass is evident; tumor is in close contact with free ventricular wall.

BEPO (etoposide, cisplatin, bleomycin, vincristine) protocol. The patient was given 200 mg etoposide on days 1 to 3, 50 mg cisplatin on days 1 to 3, 15 mg bleomycin on days 2 to 3, and 1.5 mg vincristine on the first day. After 3 days, chemotherapy was discontinued due to the risk of massive pulmonary embolism with necrotic tumor masses. ECHO examination was performed on a daily basis, and the tumor mass showed no tendency to decrease; small hypodense areas appeared. We decided on surgery with the aim of decreasing the tumor mass and releasing the right ventricular inflow and outflow. Before the procedure, an MRI of the heart was done (Fig 1) to discern possible thrombotic masses from tumor tissue.

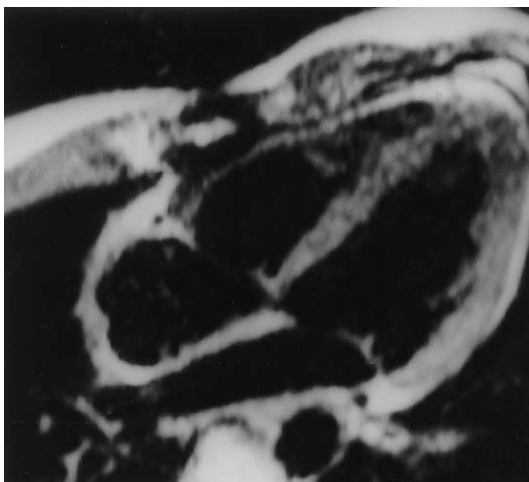


Fig 2. Magnetic resonance imaging of the heart 6 months after the operation. Spin echo magnetic resonance in longitudinal four-chamber view; there is no evidence of tumor mass.

Tumor markers before the procedure were: AFP, 377 IU/mL; beta HCG, 11,620 mU/mL.

On day 10 after admission to the hospital and on day 8 after making the diagnosis, the patient was operated upon in normothermic cardiopulmonary bypass. The pulmonary artery was cross-clamped as well to prevent tear of the high mobile tumor mass into the lungs. The tumor infiltrated the right ventricular free wall, and pushed itself between the tricuspid valve supporting structures, so an antegrade cold blood cardioplegia was administered. A radical removal of the tumor was not possible, because it infiltrated almost the entire right ventricular free wall. However, a complete removal in the region around the papillary muscles, chordae, and tricuspid valve leaflets was possible, to obtain a competent tricuspid valve after the operation. The results of the histologic investigation of removed tissue revealed a metastasis of choriocarcinoma with components of immature teratoma.

After the procedure, the patient had no complaints and was transferred to the Institute of Oncology for further chemotherapy on the 10th day. He has so far received four cycles according to the BEPO scheme. After the last cycle, his beta HCG (4.4 IU/mL) and AFP (6.3 IU/mL) levels were within normal limits, which we believe signifies tumor regression.

Control computed tomography of the thorax was performed, detecting no metastases in the lung parenchyma. MRI of the heart (Fig 2), however, still showed a thickened right ventricular free wall and apex. Orchidectomy was also carried out. The patient's clinical condition remains unchanged; subjectively, he has no major complaints and is now performing his daily activities in normal fashion 18 months after the operation.

Comment

The diagnostic procedures for determination of intracavitary myocardial neoplasms should be noninvasive (ultrasound, CT, MRI), because invasive means, such as ventriculography, do not give a better insight into the lesion, but may endanger the patient with the risk of distal embolization.

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Successful Resection of an Epicardial Cyst

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Cases of pericardial cyst have been reported by many authors, but the incidence of epicardial cyst originating directly from the epicardium in the pericardial cavity is extremely rare. A case of successful resection of epicardial cyst fortuitously discovered and diagnosed during cardiac operation is presented.

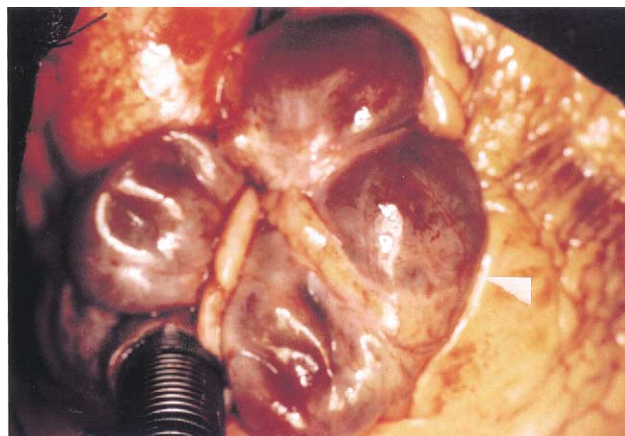
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Cases of pericardial cyst have been reported by many authors [1-3], but the incidence of epicardial cyst originating directly from the epicardium in the pericardial cavity is extremely rare; only three cases are reported in the literature [4-6]. We present a case of successful resection of epicardial cyst fortuitously discovered and diagnosed during cardiac operation.

A 60-year-old man was admitted to our hospital for aortic valve replacement because of aortic valve insufficiency. For the previous year he had slight dyspnea on climbing stairs. A III/IV pansystolic murmur was detected at the cardiac base. As a result of this murmur, further examination by echocardiography was requested; the examination revealed a massive aortic insufficiency. The other cardiac structures were normal and no abnormal mass was revealed. Laboratory study, electrocardiogram, chest roentgenogram, and coronary angiographic examination were unremarkable.

The patient underwent operation for aortic valve replacement. A midline sternotomy was used and the pericardium was noted to be normal. After a conventional longitudinal pericardiectomy a normal quantity of clear fluid was found in addition to a voluminous mass. There were no adhesions between the mass and the pericardium; its attachment to the heart was in the upper portion of the right atrium overriding the area between the right atrium and right ventricle and surrounding the proximal portion of the ascending aorta (Fig 1A). The mass was 7 × 5.5 cm, brown in appearance, elastic, soft,



A



B

Fig 1. (A) Macroscopic view of epicardial cyst. (B) Cyst excised from epicardium.

and well distended (Fig 1B). From these findings we thought the cyst originated from the epicardium. Part of the free wall tissue of the cyst was resected for immediate histologic examination, which confirmed its epicardial origin. Inside the cyst were many trabecular structures

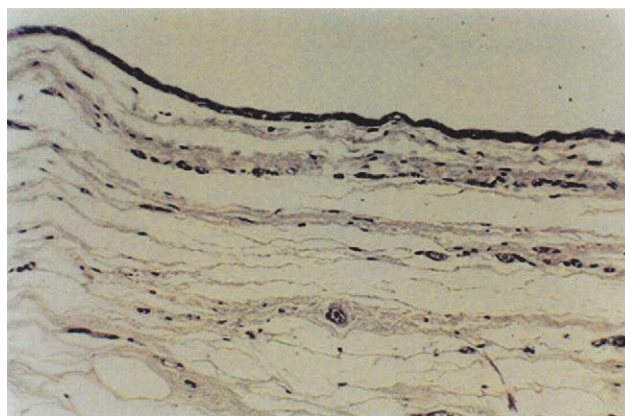


Fig 2. Microscopic view: immunohistochemical staining cyst wall layered by simple flat epithelium. (Emathosilin and eosin stain, × 250.)

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