Acute Pericarditis Secondary to Hydatid Cyst Rupture Diagnosis by Multimodality Imaging

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A 37-year-old man, a construction worker, presented to the emergency department with chest pain. He was a smoker with no other relevant clinical history, with the exception of a liver hydatidosis treated successfully by surgery 20 years before. The pain was substernal, started at rest, had a relatively rapid onset, and worsened by lying down and with deep breathing. There was no history of recent respiratory tract infection or fever.

On arrival, the vital parameters were normal. At physical examination, a friction rub was audible, and no signs of cardiac tamponade were present. The ECG showed diffuse ST-segment elevation with upward concavity (Figure 1). Chest radiography revealed a mild enlargement of the cardiac silhouette. Hemogram, creatine kinase, and troponins were normal; erythrocyte sedimentation rates were markedly increased (80 mm/h). The diagnosis of acute pericarditis was made, and treatment with nonsteroidal anti-inflammatory drugs was initiated.

Two-dimensional echocardiography detected moderate pericardial effusion and the presence of a cyst in the posterolateral wall of the left ventricle (Figure 2A; Movie I in the online-only Data Supplement). A chest computed tomography scan documented a half-moon shape calcification of the cyst with no pulmonary involvement (Figure 2B). Cardiac magnetic resonance imaging was performed. The oval cystic lesion had a subepicardial location, and it was hypointense on T1-weighted dark-blood sequences, showing a thick ring of enhancement after contrast injection, representing the pericyst. Pericardial effusion was circumferential, although an area of adherence between the layers was present surrounding the cyst. The postcontrast images revealed membranous structures over the visceral layer of the enhancing pericardium, suggesting the rupture of the cyst into the pericardium and spread of the infection to the pericardial space (Figure 2C and 2D; Movie II in the online-only Data Supplement).

Seroology revealed a high level of antibodies against Echinococcus granulosus. A final diagnosis of posterolateral hydatid cyst ruptured to pericardium was made, and treatment with albendazole (400 mg, twice a day) and praziquantel (25 mg/kg per day) started. The patient became asymptomatic in 48 hours and the ECG reverted to normal. Considering the patient’s stabilization and the good response to anti-inflammatory drugs, we decided to maintain antiparasitic drugs during 3 weeks before surgery.

At surgery, the pericardium was thick and had an intense fibrotic reaction (Figure 3A). Surgeons proceeded first to the puncture and aspiration of the cyst, obtaining a caseous material. Thereafter, multiple fragments of daughter vesicles were extracted (Figure 3A). Histological samples of the cyst fluid and pericardium demonstrated the presence of anhistic laminated membranes and the typical hooklets (Figure 3B). The patient had a good recovery and was discharged from the hospital uneventfully. He continued receiving albendazole for 3 more months.

Cystic hydatidosis is a parasitic zoonosis caused by E. granulosus. In most cases, hydatid cysts involve the liver, lungs, or both organs. Cardiac involvement is uncommon (< 2%), and it is usually intramyocardial, in the interventricular septum or left ventricular free wall, according to the coronary dominance and blood supply. Cyst rupture is the most fearful complication; rupture into the cardiac chambers may result in systemic or pulmonary emboli. Rupture into the pericardium can result in acute pericarditis, which may progress to cardiac tamponade or constrictive pericarditis.

Most patients with cardiac hydatid cyst are asymptomatic. In the case herein, chest pain was attributable to pericarditis secondary to the cyst rupture into the pericardial space.

Two-dimensional echocardiography, computed tomography, or magnetic resonance imaging are the techniques of choice for the detection and localization of cardiac cysts. In our patient, magnetic resonance was also useful to document the particular pericardial involvement of the disease.

Considering the high risk of rupture, cardiac hydatid cyst should always be treated by surgery.

Disclosures

None.

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Figure 1. Twelve-lead ECG. Diffuse ST-segment elevation with upward concavity is seen.

Figure 2. A, Transthoracic 2-dimensional echocardiogram, long-axis parasternal view. Moderate pericardial effusion and a cyst in the posterolateral wall of the left ventricle are shown. B, Chest computed tomography. A half-moon calcification side of the cyst is well seen. C and D, Cardiac magnetic resonance. A moderate to severe pericardial effusion is present (*). C, Short-axis LGE CMR. The pericyst shows a thick enhancing ring (thin arrow). D, Postcontrast T1-weighted double inversion-recovery short-axis image. Note the strong enhancement of the pericardial layers and the membranous structures inside the pericardial space representing daughter membranes (thick arrows). CMR indicates cardiac magnetic resonance; and LGE, late gadolinium enhancement.

Figure 3. A, Surgery. From left to right, pericardium with a high fibrotic response, aspiration of caseous material from the cyst, and extraction of fragmented daughter vesicles. B, Histological findings from cyst’s material and fibrotic pericardium. Left, Masson trichrome stain; anhistic laminated membranes. Right, Papanicolaou stain; hooklets are well seen (arrows).

References
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**Movie Legend**

**Movie 1.** Transthoracic 2-D echocardiogram, long-axis parasternal view. Moderate pericardial effusion and a cyst in the posterolateral wall of the left ventricle are shown. Best viewed with Windows Media Player.

**Movie 2.** Cardiac magnetic resonance. Three- chamber cine-loop showing the intramyocardial location of the cyst. Best viewed with Windows Media Player.