CARDIAC “BALL OF WOOL”: A rare case of a solid interventricular hydatid cyst

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A 49 years old Romanian lady was admitted to the department of infectious diseases because of dyspnoea, malaise and mild fever. Chest X-ray was normal. A 12 lead ECG demonstrated right bundle branch block, and a transthoracic echocardiography showed a mass in the mid inter-ventricular septum, measuring 40x25 mm, protruding into the right ventricular chamber. The mass had the appearance of a solid lesion iso-echoic with the myocardium with hypo-echoic zones inside, resembling a “ball of wool” (Figure 1), suggesting a myxoma. Otherwise, all echocardiographic parameters

Figure 1: Subcostal two-dimensional echocardiographic view of the mass in the mid-interventricular septum (AO, aortic valve; PA, pulmonary artery; RV, right ventricle; RA, right atrium, L, liver).

Figure 2: Subcostal three-dimensional echocardiographic view of the mass in the mid-interventricular septum (PA, pulmonary artery; RA, right atrium, L, liver).

Figure 3: Cardiac magnetic resonance showing the presence of a mass at the level of mid-interventricular septum.

Figure 4: After excision, the mass appeared encapsulated and measured 3x5 cm. It was filled with gelatinous material which was confirmed to be hydatid cyst.
were normal, except a mild pulmonary hypertension (PAPs 35 mmHg). During laboratory investigations, serum anti-echinococcus antibodies was positive. Various imaging investigations including CT scanning and echocardiography were undertaken, but no cysts were detected in the abdomen or chest, respectively. The cardiac mass was then studied in more detail: a three-dimensional echocardiography was performed to better appreciate the shape and the location of the mass for a cardio-surgical view (Figure 2). A cardiac magnetic resonance didn’t show specific features and indicated a probable tumour, such as echocardiography (Figure 3).

Subsequently, the developed pulmonary embolism, which was treated with warfarin, but no deep vein thrombosis were detected. The inter-ventricular mass size remained unchanged. On the basis of the clinical, serology and imaging findings, it was decided for the mass to be surgically removed. This proved the mass to be adherent to the inter-ventricular septum and extending to the right ventricular outflow tract, with a large base. After excision, the mass looked encapsulated and measured 3x5 cm (Figure 4). It was filled with gelatinous material which was confirmed to be hydatid cyst. The patient underwent an uneventful recovery and was commenced on albendazole 400 mg twice a day for 7 days and which to be recommenced in 15 days. A check-up after 3 months was negative for echinococcal disease.

Discussion
The cardiac echinoccosis we described is a rare pathology. Heart involvement represents only 0.5-2% of all cases of hydatid disease where echinococcosis is endemic. The left ventricle is the most affected (60%) part of the heart, while right ventricular and septal involvement are more rarely affected, 10% and 4% of cardiac echinococcosis respectively.

To recognize cardiac hydatid disease, clinical assessment is rarely helpful because of early asymptomatic course as well as the non-specific signs and symptoms. Right-sided cardiac hydatid cysts have a tendency to expand intracavitarily and subendocardially and right ventricular cysts rupture more frequently, so they may lead to pulmonary embolism. Imaging techniques, such as echocardiography, x-ray, computed tomography and magnetic resonance, are necessary to detect the cyst structures and make diagnosis of hydatid disease, that should be supported by the demonstration of specific serum antibodies. Serology alone is not sufficient for the diagnosis, because of its variable accuracy depending on the stage of the disease, the localization of the parasites, the antigens, and the techniques used.

Echocardiography is the test of choice to recognize hydatid cyst lesions, but it can show different ultrasonographic features depending on the stage of the parasitosis, according the WHO classification: active, transitional and inactive cyst types. In the inactive type, as was the case in our patient, echocardiographic images showed heterogeneous hypoechoic or inhomogeneous degenerative contents or the “ball of wool signs” (which is indicative of degenerating membranes) or a calcified wall producing a cone shape shadow. All these features reflect the degenerative nature of the hydatid cyst, but they do not indicate pathognomonic signs. For these reasons, the diagnosis of an inactive hydatid cyst requires further diagnostic test. 3D echocardiography was used in this case to clarify the shape and the location of the mass in an attempt to obtain a surgical view of the cardiac structure. To further improve the diagnostic power of echocardiography we performed a cardiac magnetic resonance (CMR). The appearance of a hydatid cyst on CMR is usually an oval lesion that is hypointense on T1-weighted images and hyperintense on T2-weighted images. A typical finding on T2-weighted images is a hypointense peripheral ring, which represents the pericyst, and specific signs include calcification of the cyst wall, presence of daughter cysts and membrane detachment. Unfortunately, no specific sign was detected with CMR in our patient, which did not help in making a sound differential diagnosis. The positive serology, the episodes of pulmonary embolism and the origin of the patient have increased the suspicion that the cardiac mass could be a hydatid cyst, that was confirmed only with pathological examination during the cardiac surgery.

Conclusions
A few cases of cardiac echinococcosis mimicking a tumour lesion have been reported. The solid nature of our patient’s cyst failed all imaging techniques to make an accurate diagnosis. Such limitation highlights the need for a comprehensive approach to suspected patients, using clinical, epidemiologic and laboratory findings in addition to imaging.

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References