Acute pulmonary embolism due to the rupture of a right ventricle hydatid cyst

Hatem Lahdhili*, Sabeur Hachicha, Mohamed Ziadi, Habib Thameur
Department of Cardiovascular Surgery, Military Hospital, 1008 Montfleury, Tunis, Tunisia
Received 4 February 2002; received in revised form 29 April 2002; accepted 2 May 2002

Abstract

Hydatid pulmonary embolism is an uncommon condition resulting from the rupture of a hydatid heart cyst or the opening of a visceral hydatid cyst (often in the liver) into the venous circulation. We report a case of hydatid pulmonary embolism following rupture of a hydatid cyst in the right ventricle. Pulmonary angiography showed right pulmonary occlusion. Echocardiography, computed tomography scan and magnetic resonance imaging showed images suggesting a hydatid cyst. The patient underwent sternotomy and cardiopulmonary bypass in order to treat the heart cyst and remove the hydatid pulmonary obstruction. A concomitant lung hydatid cyst was extirpated.

Keywords: Echinococcosis; Hydatidosis; Pulmonary embolism

1. Introduction

Cardiac hydatidosis cyst is a rare parasitic disease [1]. The right ventricle localization is exceptional and may be revealed by cyst rupture. Hydatid pulmonary embolism generally occurs after an intracardiac rupture of the right ventricle hydatid cyst. Because this rupture can be potentially lethal, diagnosis and therapy must go hand in hand. We report a case of acute hydatid pulmonary embolism and discuss the clinical and surgical therapeutic approach.

2. Case report

A 20-year-old woman with an uneventful history was hospitalized for acute respiratory distress, precordial pain and high fever. On examination, crepitant and bronchial rales were heard in the right lung field, and a pulse rate of 100/min and small engorgement of the neck veins were noticed. A chest roentgenogram revealed no evident anomalies of cardiac outlines. The electrocardiogram exhibited non-specific ST wave changes in right precordial leads. Cross-sectional echocardiography showed a dilatation of the right pulmonary artery and the presence of a cystic mass of 5–6 cm in the apical area of the right ventricle. A pulmonary angiography (Fig. 1) and CT scan showed complete occlusion of the right pulmonary artery. Nuclear magnetic resonance imaging (MRI) revealed an apical right ventricular cyst (Fig. 2). The clinical history, imaging findings and the fact that hydatid cysts are still endemic in our country led to the diagnosis of a pulmonary embolic cyst.

An operation was performed though a median sternotomy incision, the pericardium was carefully opened, and a cardiopulmonary bypass (after adding a supplementary filter to the venous circuit) was initiated under cold potassium cardioplegic arrest. The operative field was protected by sheets with hypertonic saline solution.

Right ventriculotomy was performed, the cyst (5 cm in diameter) was exposed through the incision, the cyst cavity was found to be empty and connected with the right ventricle chamber with an orifice of 1.5 cm in diameter. The residual cavity was closed by sutures strengthened with Teflon splints to which biologic glue was added. The ventriculotomy was closed.

A longitudinal arteriotomy reaching the bifurcation was made in the pulmonary trunk. The right pulmonary artery was completely obstructed by hydatid membrane, which was removed with good backbleeding. After irrigation with saline solution the arteriotomy was closed. Postoperative pulmonary angiogram showed good revascularization of the right pulmonary artery. The patient was discharged after 2 weeks and treated with Albendazole. Six years later, she is doing well without signs of chronic cor pulmonale. The patient has a check-up every 6 months by physical
examination, chest roentgenogram, echocardiography and anti-echinococcal antibodies. There has been, until recently, no evidence of thoracic hydatidosis recurrence.

3. Discussion

The hydatid cyst is a tumour caused by the development of the embryonic form of echinococcus granulosus in humans. It remains a public health problem in the sheep raising regions of the world. Cardiac echinococcosis is an infrequent disease and is seen in 0.2–3% of patients with echinococcal disease [2]. Cardiac hydatidosis is often primitive and unique, and it may be secondary after the rupture of a pericardial hydatid cyst [3].

Our service receives mainly the cardiopericardial cysts. This case is one of 45 cardiopericardial hydatid cysts operated on between 1970 and 1997. The literature contains approximately 50 cases of hydatid pulmonary embolism.

A hydatid cyst reaches the heart through the coronary arteries. The larvae penetrates the intestinal mucosae via portal circulation to the liver as the first organ affected. The lungs are the next site where the embryo lodges. The larvae can reach the right atrium through the return venous system and enter the left side of the heart and the coronary arteries either by way of a patent foramen ovale or pulmonary circulation. In addition, the scolices can come either from an adult hepatic cyst reaching the right atrium through the portal system or from a rupture of a lung cyst into the pulmonary veins [4,5].

Rupture is a lethal complication that frequently reveals a cardiac hydatid cyst. Pulmonary embolism may be due to rupture of a hydatid cyst in the right ventricle or a venous migration of daughter vesicles to the right heart and then pulmonary arteries.

Clinical manifestations of the hydatid pulmonary embolism are not specific although hemoptisy is the most frequent sign [6]. When there is no medical history of a visceral hydatid cyst, a high index of suspicion is necessary to diagnose that the pulmonary embolism is due to a hydatid cyst. Echocardiography is the investigative procedure of choice for studying cardiopericardial hydatidosis but it rarely enables direct visualization of the pulmonary embolus. With transoesophageal echocardiography, it is possible to visualize massive emboli in the central pulmonary arteries [7]. In our case report, pulmonary embolism was confirmed by CT scan and angiography, and its hydatid nature is guided by echocardiographic and MRI findings.

Median sternotomy with cardiopulmonary bypass remains the surgical approach of choice to treat the cardiac hydatid cyst and to remove echinococcal material from pulmonary arteries. The sternotomy can also provide access to treat lung hydatid cysts during the same stage as cardiac cysts.

Treatment of the residual cavity constitutes a delicate step [8], and our policy is to use the gelatin–resorcin–formalin (GRF) glue in the goal to efface completely the residual cavity without deforming the ventricular cavity by an important number of sutures.

References


