Case report

Hydatid cyst involving the aortic arch

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Abstract

We report a very rare case of primary mediastinal hydatid cyst which invaded the ascending aorta and the aortic arch which initially presented as a cranial mass. Aortic wall is a very unusual site for the hydatid cysts. To the best of our knowledge, this is the first reported case of hydatid cyst located within the aortic arch lumen. Patient underwent ascending aortic and hemiarch replacement under hypothermic circulatory arrest and removal of the cyst. Patient had an uneventful recovery and has been on follow-up. Although the literature data are very limited, we believe that the aortic procedure of choice should be graft interposition rather than patch repair.

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1. Introduction

Hydatid disease continues to be a significant health problem in some areas of the world. Aortic wall involvement by the hydatid cysts are very rare, and less than 20 cases have been reported, all but 1 being the descending thoracic or abdominal aorta [1—6]. A case of hydatid cyst involving the ascending aorta and the left atrium was reported [7]. We report a case of hydatidosis involving the proximal aortic arch.

2. Brief case report and the surgical technique

A 54-year-old woman complaining of severe headache and speech disturbances presented to another hospital where she underwent craniotomy for the removal of a 5 cm cystic mass which was diagnosed by the CT scan of the head. Since the pathological diagnosis was hydatid cyst, the CT scan of the chest and abdomen was performed to look for the other possible locations, which showed an 8 cm × 5 cm anterior mediastinal mass invading the lumen of the aorta (Fig. 1). Patient was referred to our hospital and was taken to operation after routine preoperative work-up.

Operation was performed through a median sternotomy in supine position after preparing the patient as in a routine open heart procedure. The mass was intrapericardial, nonpulsatile, located on the anterolateral aspect of the ascending aorta and the proximal aortic arch, extended inferoposteriorly medial to the superior vena cava, and pushed the right main pulmonary artery downwards. It was deemed appropriate to replace the aorta under circulatory arrest since its lumen was invaded by the disease and aortic clamping was not possible. After heparinization, the distal aortic arch, which was thought to be intact by external examination and CT images, and the right atrium were cannulated. Rigorous handling of the aorta was avoided. Cardiopulmonary bypass was instituted and the patient was cooled down to rectal temperature of 18°C. Needle aspiration of the cyst, to make it smaller for an easier dissection, did not yield any fluid. The surgical field was covered with iodine-soaked sponges to prevent possible seeding. Under circulatory arrest, the ascending aorta was transected just distal to the sinotubular junction. Aortic lumen was opened longitudinally to see the distal border of the lesion. The hydatid tissue constituted the lateral wall of the aorta causing a cul-de-sac which could also be named as a false aneurysm (Fig. 2a and b). The ascending aorta and part of the aortic arch was resected and left attached to the hydatid mass. The ascending aorta and hemiarch replacement was performed by using a Dacron T-graft. The arterial cannula which had to be removed for hemiarch anastomosis was reinserted to the side arm of the T-graft. Proximal anastomosis was performed at the level of the sinotubular junction while warming. The rest of the mass, which contained friable necrotic material, membranes, and daughter vesicles was removed in toto together with its pericystic wall from the surrounding tissues. Patient was...
weaned from cardiopulmonary bypass. Hypothermic circulatory arrest time was 40 min. Patient had an uneventful recovery and was discharged with instructions to take albendazol for a year, and scheduled for CT of the whole body 3 months later. Histopathological examination confirmed the diagnosis of hydatidosis.

3. Comment

Hydatid disease is caused by the parasite *Echinococcus granulosus* which forms cysts. Ingested parasite embryo crosses the intestinal wall and reaches the portal circulation, where it is frequently stopped. Those that escape may be entrapped in the pulmonary circulation. Therefore, the liver and lung are typical locations of the cysts. Rarely, it can reach to systemic circulation and may infest any organ. The hydatid disease may cause life threatening complications such as anaphylactic shock, hemorrhage, systemic emboli, and arterial occlusion [1—3,7]. This case is an example of its malignant behavior. By looking at the specimen, we can speculate that the cyst ruptured into the aortic lumen causing some degree of systemic reaction. However, the patient denied presence of any symptoms related to anaphylaxis before she developed neurological ones. A case of rupture into the peritoneal cavity without anaphylaxis was reported [8]. Cerebral cyst, in this case, could either be metastatic from the mediastinal one or another primary cyst which grew metachronously. Primary mediastinal hydatidosis was reported [3]. How the hydatid cyst can penetrate the aortic wall remains unknown [5].

There is no recommendation whether to use a Dacron patch or a graft interposition after excision of the cyst due to rarity of the aortic hydatidosis. By the use of partial resection and patch repair, good outcome in a descending aortic [5], recurrent fatal bleeding in one [2], and false aneurysm in another case [6] of abdominal aortic hydatidosis were reported. However, resection with graft interposition has been successful in all reported cases [1,7]. In addition to graft interposition, we removed all the pericystic adventitia in order not to leave a cavity behind due to its potential risk for perigraft infection.

We preferred not to use the femoral artery cannulation since the retrograde flow might cause turbulence and dislodge emboli to the innominate artery. Axillary artery cannulation could have been used with its benefits such as avoidance of aortic handling and ability to deliver antegrade cerebral perfusion to limit brain ischemia. Although we routinely use subclavian artery cannulation for aortic arch surgery, we were not sure whether the orifice of the innominate artery was involved by the cystic tissue. With the concern of small possibility of causing particle dislodgement to descending
aorta by retrograde flow, we decided not to use it. However, to remove all the friable components of the cyst prolonged the circulatory arrest time. In spite of that, patient did not develop any temporary neurological dysfunction.

Regardless of the surgical technique used, close follow-up is warranted to detect possible recurrence at an early stage. Hydatidosis of the aorta can be treated surgically by careful application of aortic surgery routine. Although the literature data are very limited, we believe that the aortic procedure of choice should be graft interpositon rather than patch repair.

References


