Surgical management of an aneurysm of the left atrial appendage to prevent potential sequelae

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Abstract

An aneurysm of the left atrial appendage is an extremely rare anomaly that is commonly associated with supraventricular arrhythmia, compression of the coronary arteries, intracardiac thrombus and pulmonary venous stenosis. This condition may be caused by congenital dysplasia of the musculi pectinati and is usually diagnosed in the second to fourth decades of life. We report the surgical management of an asymptomatic 9-year old girl with this anomaly. She was referred to us because of abnormal chest X-ray findings, and investigation revealed an aneurysm of the left atrial appendage. As this condition may have potentially fatal complications, the aneurysm was completely resected under cardiac arrest with cardiopulmonary bypass to prevent recurrence and thrombus formation. We suggest that resection of an aneurysm of the left atrial appendage under cardiac arrest with cardiopulmonary bypass is a reasonable treatment option to prevent potential complications, particularly in children.

Keywords: Aneurysm • Left atrial appendage • Congenital heart disease

INTRODUCTION

An aneurysm of the left atrial appendage is an extremely rare anomaly, which is usually diagnosed in the second to fourth decades of life [1, 2]. Although it is recognized as a congenital anomaly, there are few reported cases in children. As this condition is associated with potentially fatal complications, resection should be considered even in asymptomatic cases. We report the surgical management of an asymptomatic 9-year old girl with this condition who underwent aneurysmectomy through a median sternotomy under cardiac arrest with cardiopulmonary bypass.

CASE REPORT

A 9-year old girl was referred to our hospital for the management of an asymptomatic aneurysm of the left atrial appendage. Cardiomegaly had been detected on chest X-ray prior to planned tonsillectomy at another hospital. Physical examination revealed a well-developed girl with a height of 136.5 cm and a body weight of 32.0 kg. Chest X-ray showed protrusion of the left third arch and cardiomegaly. Transthoracic echocardiography demonstrated a giant cystic mass arising from the left atrium, which compressed the left ventricle. No thrombus was detected. Multidetector row computed tomodraphy (MDCT) and magnetic resonance imaging (MRI) showed a mass measuring 67 × 69 × 85 mm in the area of the left atrial appendage, near the orifice of the left upper pulmonary vein (Fig. 1). Electrocardiography showed normal sinus rhythm. The patient was diagnosed with an aneurysm of the left atrial appendage.

A standard median sternotomy was performed. Cardiopulmonary bypass was established with aortic and bicaval cannulations. The aneurysm of the left atrial appendage was visualized posterolaterally, with no pericardial adhesions. The entire left atrial appendage was aneurysmal, and the free wall was very thin, with no musculi pectinati (Fig. 2). After antegrade cardioplegia and cardiac arrest, the aneurysm was completely resected to the margin of the left atrial appendage. The stump was closed by a double layer of continuous over-and-over sutures, taking care not to obstruct the orifice of the left upper pulmonary vein. There were no thrombi or indications of inflammation in the aneurysm or the left atrium, and no other cardiac abnormalities were observed. She did not have a completely uneventful recovery because a minor pericardial effusion appeared on the eighth postoperative day, causing her to remain in hospital for several days. She was discharged from the hospital on the 12th postoperative day. One week after hospital discharge, transthoracic echocardiography demonstrated no recurrence of an aneurysm, thrombus formation and pericardial effusion.

DISCUSSION

Aneurysm of the left atrial appendage is an extremely rare anomaly, and only a few cases have been reported in the literature. This condition may be caused by congenital dysplasia of the musculi pectinati, which is supported by the operative findings in our patient [3]. The condition is usually diagnosed in the second to fourth decades of life because of symptoms such as palpitations, progressive dyspnoea, atypical chest pain and stroke, and...
may result in sudden death due to supraventricular arrhythmia, compression of the coronary arteries, intracardiac thrombus or pulmonary venous stenosis [1, 2].

In asymptomatic patients such as ours, the aneurysm may be detected incidentally by an enlarged heart silhouette on chest X-ray [4]. The aneurysm can be visualized on transthoracic echocardiography, and even better on transoesophageal echocardiography. Other investigations, such as MDCT, MRI, coronary angiography and 24-h Holter electrocardiography, can help to confirm the diagnosis and rule out other pathological conditions, such as mediastinal or cardiac tumours, anomalous pulmonary venous drainage, cardiac herniation caused by a pericardial defect and secondary causes of enlargement of the left atrium. In our case, only MDCT and MRI were performed, because these were sufficient to make an accurate diagnosis and to rule out other conditions.

Because this condition may have fatal complications, surgical resection should be considered before the appearance of critical symptoms, even in asymptomatic cases. In previously reported cases, various successful approaches to aneurysmectomy have been described, including median sternotomy, left thoracotomy and mini-thoracotomy [1–5]. Resection has been performed with or without cardiopulmonary bypass. In our case, we chose a median sternotomy approach, and the aneurysm was resected under cardiac arrest with cardiopulmonary bypass, because complete resection of the aneurysm was required to prevent recurrence and thrombus formation. The cardiac arrest enabled us to accurately determine the resection line at the margin of the left atrial appendage. We also took care not to obstruct the orifice of the left upper pulmonary vein.

In conclusion, an aneurysm of the left atrial appendage is a rare anomaly with potentially fatal complications. Once the aneurysm is diagnosed, surgical resection should be performed even in asymptomatic cases, because the risks associated with surgery are relatively low and the outcome is generally good. Resection under cardiac arrest with cardiopulmonary bypass is reasonable, to enable accurate resection of the aneurysm and to prevent postoperative complications, particularly in children. Careful follow-up is necessary.

Conflict of interest: none declared.

REFERENCES