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Subepicardial Lipoma of the Posterior Atrioventricular Sulcus in Children: A Case Report and Review of The Literature

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ABSTRACT

Cardiac lipoma rarely is reported in the pediatric population. We report a case of subepicardial lipoma of the posterior atrioventricular sulcus in a child. The tumor successfully was resected, and the patient recovered well after the operation.

INTRODUCTION

Cardiac lipoma accounts for 8.4% of all primary cardiac tumors [Amano 2013; Habertheuer 2014]. Cardiac lipoma can occur in the subendocardium, myocardial tissue, epicardium, and pericardium. The most common sites are the right atrium, left ventricle, and pericardium [Ortega 2015]. There have been no more than 400 cases of cardiac lipoma reported in recent years. Cardiac lipoma can occur at any age, usually between 40 to 60 years. Cardiac lipoma in the pediatric population is very rare [Ismail 2015; Ozaki 2006]. Surgical resection is an effective method for the treatment of cardiac lipoma [Thomas-de-Montpréville 2007]. We report a case of subepicardial lipoma in the posterior atrioventricular sulcus in a child. It successfully was resected, and the patient recovered well after the operation.

CASE DESCRIPTION

The case involved a male pediatric patient, who was 8 years old, weighed 28kg, and was 133cm tall. The patient was admitted to our hospital without any chief complaint. One month prior, the patient underwent physical examination in the clinic, and the cardiac mass was found by transthoracic echocardiography with no positive symptoms and signs. Echocardiography showed a hyperechoic mass 3.5*5.5*5.0 cm in size; it was located in the posterior atrioventricular sulcus and posterolateral left ventricle. (Figure 1) The hyperechoic mass had a clear boundary and uniform internal echo and moved with the cardiac cycle. There was no obstruction of blood flow inside the heart. The echo, opening, and closing of the cardiac valves were normal. Further cardiac CTA examination revealed that a mass with the size of 3.3*5.7*3.1cm was located in the base of the heart, invading the posterior atrioventricular sulcus and enclosing the branches of the right canal. (Figure 2) The inflow and outflow channels of the left ventricle and right ventricle were unobstructed. The left ventricle, right ventricle, and great arteries developed normally, and the origin of the coronary arteries was normal. According to the clinical manifestations and auxiliary examination results, the diagnosis of the child was as follows: mass at the bottom of the heart. After completing the electrocardiogram, blood routine, biochemistry, blood coagulation, and other preoperative tests, we performed cardiac mass resection.

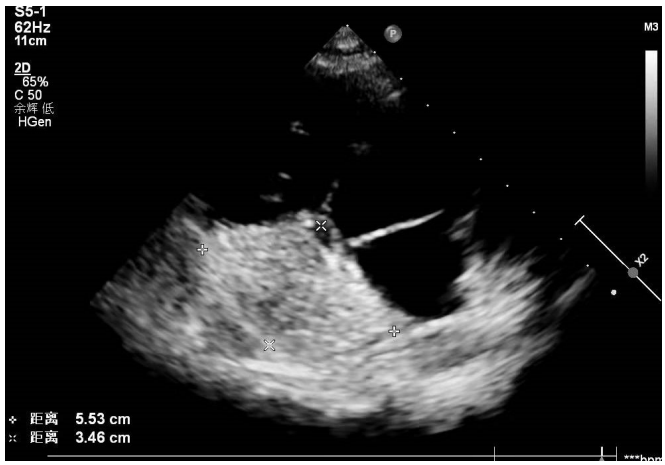

Figure 1. Echocardiography showed a hyperechoic mass in the posterior atrioventricular sulcus and posterolateral left ventricle.

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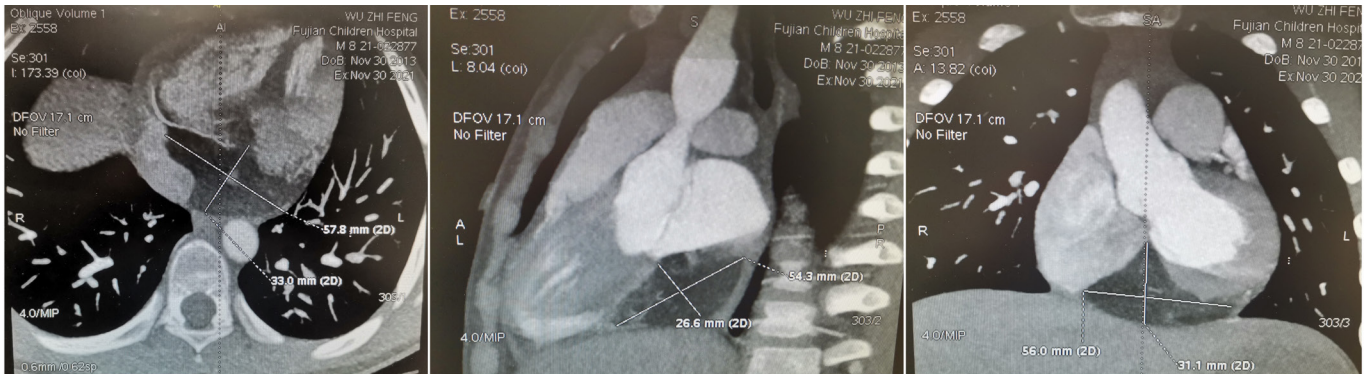

Figure 2. Cardiac CTA showed a mass in the base of the heart, invading the posterior atrioventricular sulcus and enclosing the branches of the right canal.

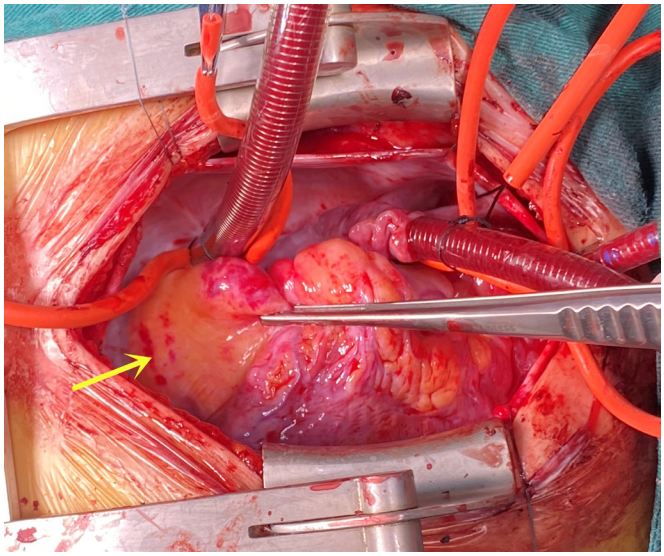

Figure 3. During the operation, a yellow mass was exposed on the surface of the posterior atrioventricular sulcus and the posterolateral area of the left ventricle, which closely adhered to the heart and invaded the myocardial layer.

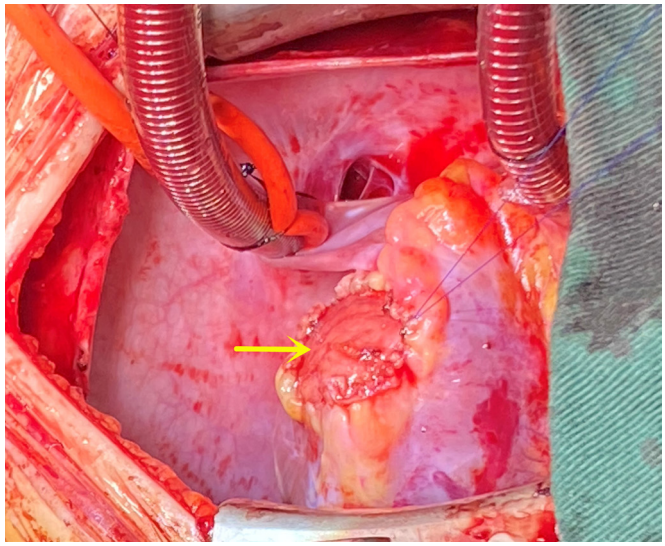

Figure 4. An autologous pericardium patch was used for wound repair and hemostasis.

We completed the resection of cardiac mass under cardiopulmonary bypass. During the operation, we noticed that a yellow mass was seen on the surface of the posterior atrioventricular sulcus and the posterolateral area of the left ventricle, which was about 6*4cm, with a clear boundary, but closely adhered to the heart and invaded the myocardial layer. (Figure 3) Along the edge of the mass and close to the surface of the myocardium, we gradually peeled off and resected the mass. Then, we cut the corresponding size autologous pericardial slice and sutured it along the edge of the wound. (Figure 4) Postoperative pathological diagnosis revealed cardiac lipoma. (Figure 5)

DISCUSSION

The primary cardiac tumor is a rare lesion with a variety of histological types. In adults, myxoma is the most common primary benign cardiac tumor, followed by fibroma, lipoma, and teratoma [Amano 2013; Habertheuer 2014]. Cardiac tumors are rare, especially in infancy and childhood. The more common cardiac tumors in children are rhabdomyoma, fibroma, and myxoma [Meng 2002]. Cardiac lipoma in children is an extremely rare benign tumor, and there are few reports in this field. Cardiac lipomas usually are asymptomatic because they grow slowly and softly and are usually accidentally found during autopsies or examinations for other reasons. Only a small number of patients may show clinical symptoms, depending on their location and size [Sun 2018]. For intracardiac lipomas, obstruction of blood flow may lead to symptoms ranging from fatigue to syncope; large pericardial lipomas can cause symptoms by oppressing the cardiac cavity, blood vessels, or coronary arteries. Angiomyolipomas are prone to conduction abnormalities through compression or infiltration of the conduction system, and small lipomas in special parts such as heart valves may also cause severe symptoms [Rainer 2016]. This case of cardiac lipoma originated

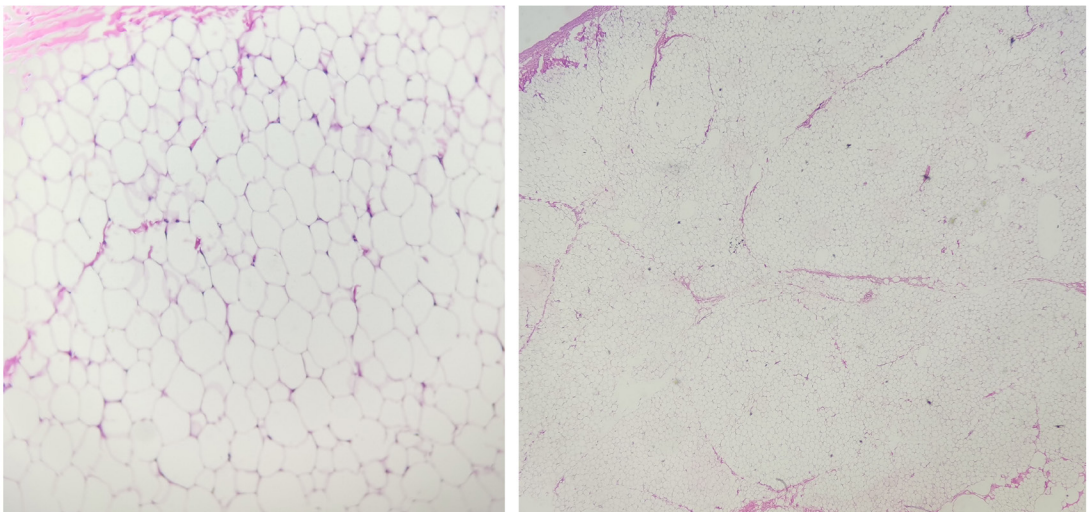

Figure 5. Postoperative pathological diagnosis revealed cardiac lipoma.

from the posterior atrioventricular sulcus and grew from the epicardium to the pericardium, the size of which was about 6*4*3cm, and it did not cause obvious compression, so the child was asymptomatic. The lipoma was found during occasional physical examination.

For the treatment of cardiac lipoma, it generally is believed that timely surgical resection is recommended for cardiac lipoma with obvious symptoms, especially arrhythmia, heart failure, and cardiac tamponade. For the large cardiac lipoma, there is a risk of tamponade, even if there are no symptoms, it should be resected to prevent the occurrence of tamponade symptoms. For the small one, asymptomatic lipomas can be followed up regularly [Shu 2021; Elbardissi 2008]. In this case, the cardiac lipoma was large, and there was a risk of tamponade. Although there were no symptoms, the heart had been under pressure, so we chose to undergo surgical resection in time.

Because lipomas are benign tumors and rarely recur after surgery, surgical resection can usually achieve good results, even if some lipomas cannot be completely removed because of their proximity to important tissue [Al-Sabeq 2019]. In this case, the cardiac lipoma adhered closely to the coronary artery and invaded the myocardial layer. To protect the myocardium and coronary artery, we resected the lipoma along the edge of the mass and close to the surface of the myocardium but did not completely resect the tumor. Because of the large volume of the tumor, wide range of involvement, and much bleeding of the wound, we used an autologous pericardial patch to suture the wound to stop bleeding and achieved good results.

At present, concerning the clinical characteristics and short-term and long-term results of surgical treatment of cardiac lipoma, the vast majority of literature at home and abroad are case reports, lack large groups of clinical case reports, and there is no special report on cardiac lipoma in children. The long-term results of surgical treatment of lipoma in children are still under follow up.

CONCLUSION

In short, this case highlights a rare situation of subepicardial lipoma of the posterior atrioventricular sulcus in a child, which successfully was resected with good short-term results, but the long-term results are still being followed up.

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