Cardiology in the Young

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Safe treatment of congenital left atrial appendage aneurysm using lateral thoracotomy on a 3-year-old patient

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Brief Report

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Abstract

Limited literatures report the management of congenital left atrial appendage aneurysm (LAAA) which is extremely rare. Chest X-ray firstly showed an enlarged left cardiac silhouette for a 3-year-old patient with pneumonia. Echocardiography and magnetic resonance imaging confirmed a large cyst attached to the left atrium. Aneurysmectomy was performed through lateral thoracotomy using step-by-step method and under the guidance of transoesophageal echocardiography. We aim to show the safety and efficacy of this approach applied to children associated with congenital LAAA.

Congenital left atrial appendage aneurysm (LAAA) is an extremely rare abnormality caused by the dysplasia of the atrial muscle.[1,2] This abnormality is generally diagnosed in adults with symptoms of dyspnea, thromboembolism, arrhythmia, or even heart failure. While a large part of children seldomly show any symptoms and got missed. So the treatment on the children associated with LAAA was rarely reported and was still uncertain. In this case, we reported our experience about treatment of congenital LAAA for child patient.

A 3-year-old patient was inferred to our hospital for pneumonia and the chest X-ray showed an enlarged left cardiac silhouette (Fig 1a). Then the colour Doppler, echocardiography, and magnetic resonance imaging (MRI) were made for this patient and inferred the diagnosis of congenital LAAA without other associated abnormalities. The echocardiography revealed a large aneurysm (4 × 4 cm) lateral to the left atrium and communicating with left atrium by the aneurysmal neck (2 cm) (Fig 1b). The MRI showed that the aneurysm extended from the aortic arch to the cardiac apex (Fig 1c). Thrombus within the aneurysm was not found both in echocardiography and MRI.

After the diagnosis was made, we approached the aneurysm surgically through a left anterolateral thoracotomy without cardiopulmonary bypass. The length of incision was only about 5 cm (Fig 2a). The transoesophageal echocardiography was made through the operation. Like the pre-operative image reports, the thin-walled aneurysm was full of the surgical field and the aneurysmal neck could hardly be reached (Fig 2b). So we decided to resect the aneurysm step-by-step. First, we ligated part of the aneurysm under the guidance of transoesophageal echocardiography. Needle aspirated the blood in the cyst to reduce its volume (Fig 2c). Transoesophageal echocardiography showed the reduced volume of aneurysm (Fig 3). Then we clamped the aneurysmal neck and excised the cyst. The base of the aneurysm was closed with two rows of 4–0 polypropylene sutures. The pathological examination of the resected body of LAAA (Fig 2d) confirmed the diagnosis. The blood pressure and cardiac rhythm kept stable during the operation. To avoid the possibility of thrombosis, we used low molecular weight heparin at 80–100 U/kg which kept the activated clotting time of whole blood between 240 and 300 seconds during the operation and the aspirin at 3–5 mg/kg/day for 3 months after the operation as our anticoagulation strategy. The post-operative mechanical ventilation time was 3 hours and intensive care unit stay was 1 day. The patient recovered uneventfully and remained asymptomatic at follow-up.

Limited literatures report the management of congenital LAAA which is extremely rare.[3–6] About 95% patients associated with LAAA received the aneurysmectomy according to the previous report.[1] Recently, the main approach to excise the aneurysm is the use of cardiopulmonary bypass via median sternotomy. Zhao and Baburaj[4,5] ever reported the use of left lateral thoracotomy to excise the aneurysm of adult patients which were considered risky.[1,6] However, we could benefit from the use of left anterolateral thoracotomy if we choose the right patient in our opinion. Thrombus within the aneurysm is the contraindication of this approach. Because of embolisation caused easily by manipulating the aneurysm, we should exclude the thrombus in the aneurysm at pre-operation. Both echocardiography and MRI showed no thrombus in the aneurysm of our patient.

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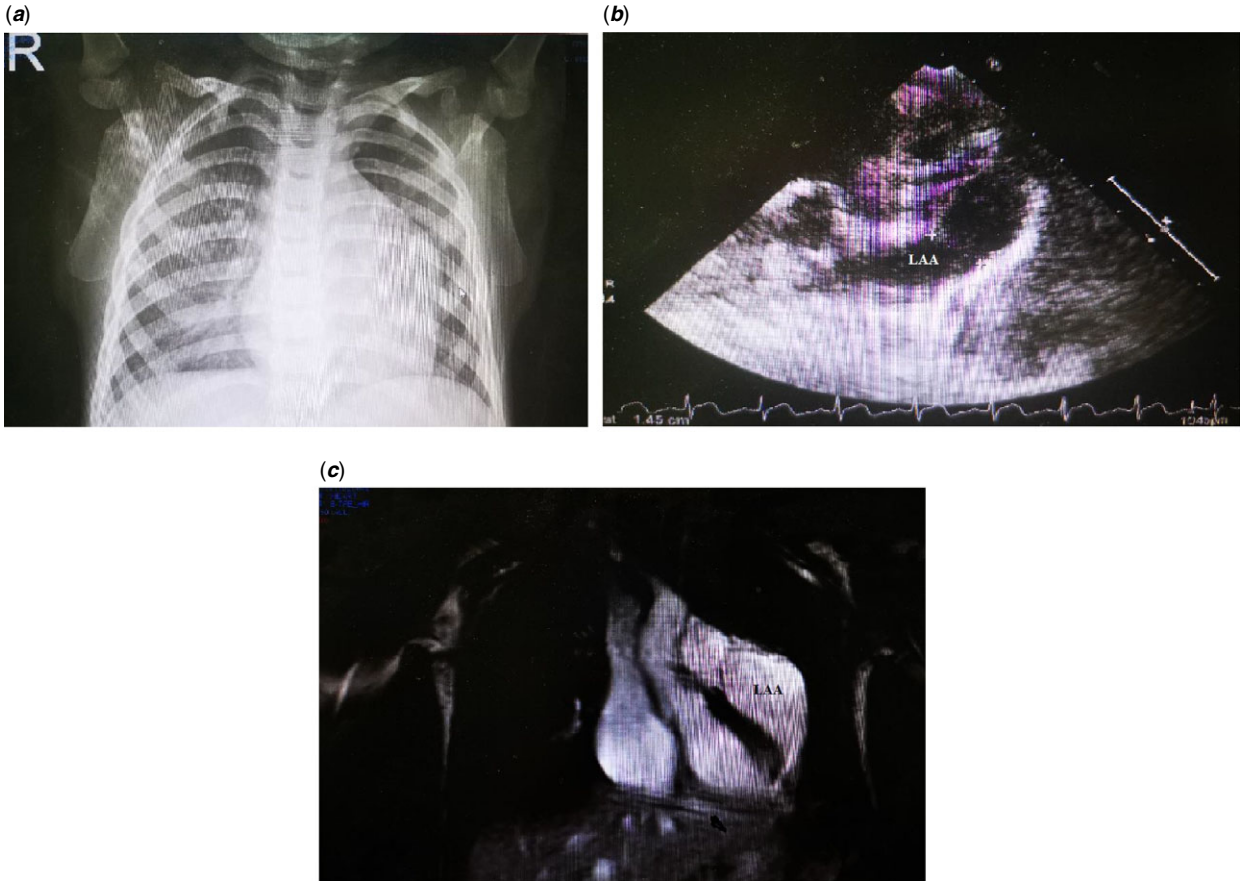

Figure 1. Pre-operative images of (***a***) chest radiogram showing the enlarged upper left cardiac border, (***b***) echocardiography showing the large LAAA connected to left atrium, and (***c***) MRI showing that the aneurysm extends from the aortic arch to the cardiac apex.

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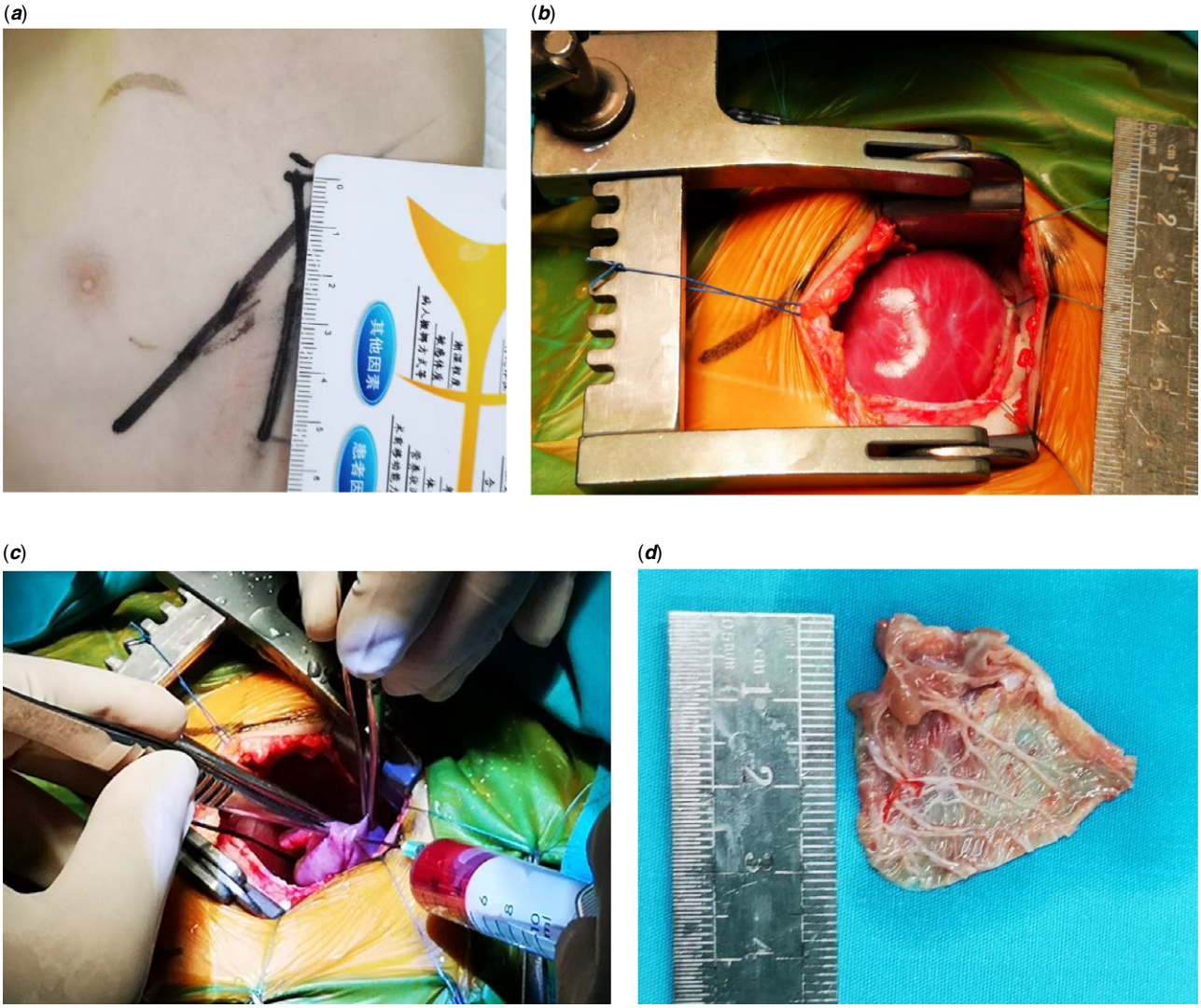

Figure 2. Intra-operative views of (***a***) surgical incision, (***b***) surgical field before the excision of LAAA, (***c***) needle aspirating the blood in the cyst, and (***d***) resected specimen of LAAA.

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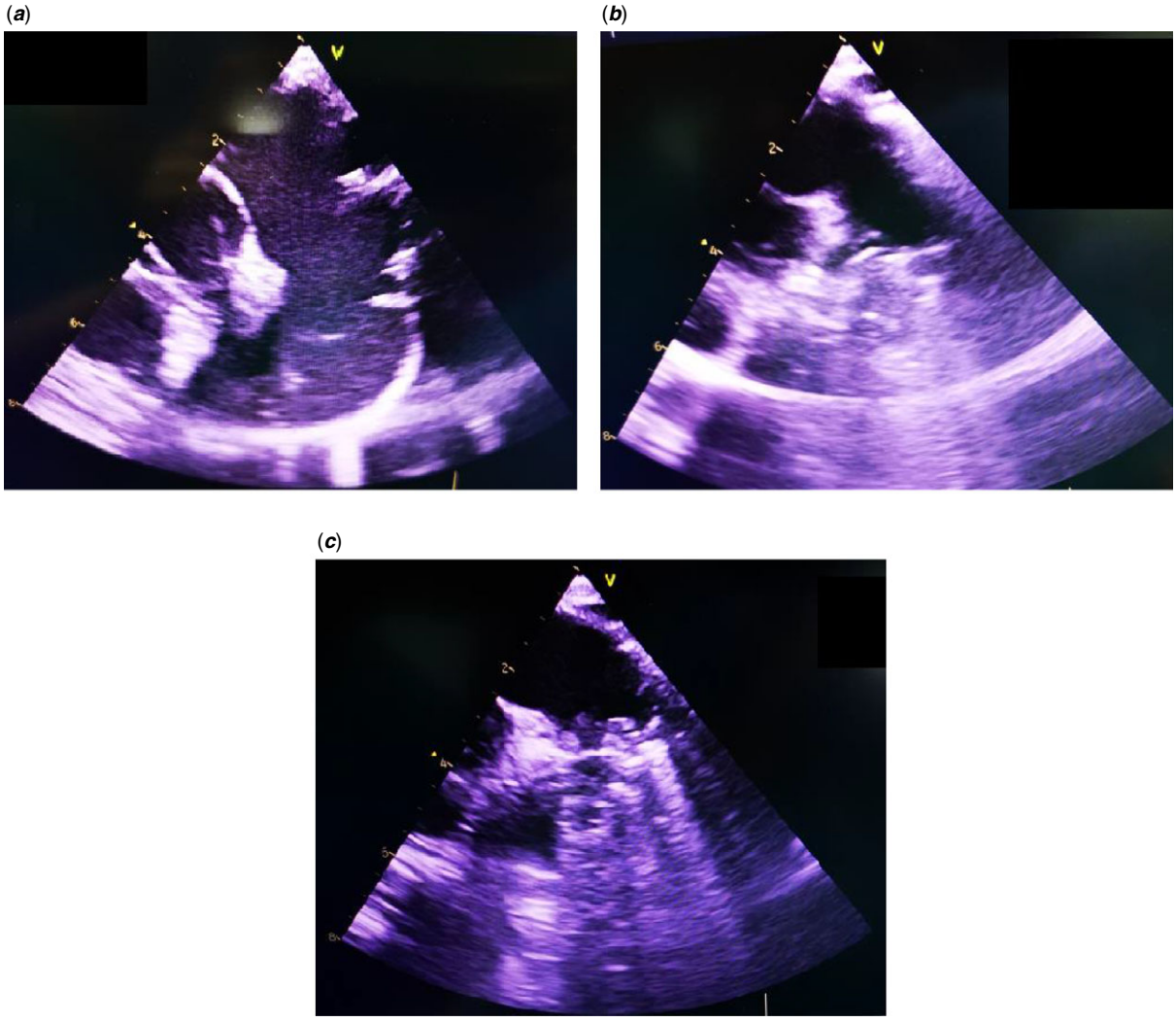

Figure 3. Operative transoesophageal echocardiography guiding the excision of LAAA (***a***) before excision, (***b***) partly resected, and (***c***) after excision.

Another challenge of thoracotomy might be exposing the aneurysm. We excised the aneurysm cyst step-by-step under the guidance of transoesophageal echocardiography when we found the aneurysm was full of the surgical field. As far as we know, our case is the youngest patient who successfully received the aneurysmectomy via left anterolateral thoracotomy. According to our experience, this approach could obviously reduce the trauma of operation and avoid the injury of cardiopulmonary bypass. We showed the safety and efficacy of this approach applied to children associated with congenital LAAA.

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Conflicts of interest. None.

Ethical standards. This research was approved by the institutional review board at Beijing Children's Hospital.

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