Large nonapical right ventricular diverticulum in a patient with atrioventricular septal defect

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ABSTRACT

Congenital diveticula and aneurysm of the heart are rare and most often located at the apex of the left ventricle. They pose a significant risk for cardiac failure and arrhythmias. In contrast, nonapical diverticula of the right ventricle (RV) have a much more benign course. We present a child with Trisomy 21, atrioventricular septal defect, and large nonapical diverticulum of the RV that was neither addressed during surgery nor needed any medical treatment during 1-year follow-up.

Keywords: Atrioventricular septal defect, congenital aneurysm, congenital diverticulum

CLINICAL SUMMARY

We present a 5-day-old newborn with trisomy 21 that was transferred to our institution due to prenatal-detected atrioventricular septal defect (AVSD). Postnatal echocardiography confirmed the diagnosis of Rastelli Type A AVSD. As an incidental finding that was not picked up prenatally, the child had a large nonapical diverticulum of the right ventricle (RV), presenting as a "third ventricle" [Figure 1a and Video 1]. The 1.5 cm × 1 cm large diverticulum was at the lateral base and communicated with the RV via a small opening (2 mm) [Figure 1b and Video 2]. The wall of the diverticulum appeared normal on the echocardiogram and during surgical inspection. The child was treated with anticongestive medication due to the AVSD until surgery at the age of 3.5 months. No anticoagulation was given. Due to its inert nature, the diverticulum was not addressed during corrective surgery. Surgery and postoperative treatment were uneventful. During 1-year follow-up, the absolute size of the diverticulum did not change, but the opening between RV and diverticulum became more restrictive [Figure 1c, d and Video 3]. Neither thrombus formation was seen, nor have there been any arrhythmias.

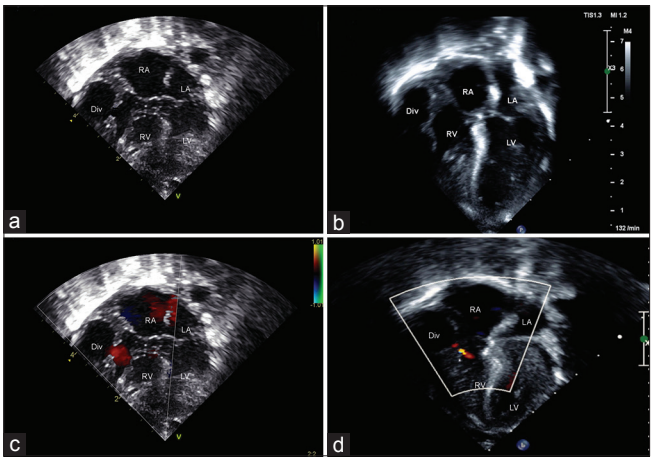

Figure 1: Apical four-chamber view on admission (a and b). And, at 1 year, after correction of atrioventricular septal defect (c and d). Div: Diverticulum, RA: Right atrium, RV: Right ventricle, LA: Left atrium, LV: Left ventricle

Congenital diverticula and aneurysms of the heart are rare, most often located at the apex of the left ventricle.[1] Nonapical diverticula of the RV are even more uncommon and have not been described with

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an AVSD so far.[2] Distinguishing these two entities is controversial; diverticula typically contract during systole have a free wall of normal three myocardial layers and a smaller opening to the ventricle.[3] All these features were present in our case. The exact histologic components were not examined on a specimen but can be anticipated by echocardiography and direct visualization during surgery. Arrhythmias and heart failure are major concerns.[4] No arrhythmias occurred in our patient. Distinguishing the portion of cardiac failure due the underlying AVSD and the diverticulum during the presurgical period is impossible, but after surgery, no cardiac failure was present. In addition, no thrombotic problems occurred.

This report supports the benign nature of RV nonapical diverticula.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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