Blood cyst of tricuspid valve: an incidental finding in a patient with ventricular septal defect

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Blood-filled cysts of heart valves are rare in adults. These cysts are diverticuli lined by endothelium and filled with blood. They appear to be benign lesions and should be removed if they cause problems. We present the case of a mobile tricuspid valve blood cyst that was incidentally found in a patient evaluated for systolic heart murmur. Systolic murmur was found to originate from a muscular-type ventricular septal defect of no haemodynamic significance. The lack of echocardiographic evidence of tricuspid valvular dysfunction and indication for repair of co-existent ventricular septal defect suggested a benign course and, therefore, we monitored the patient safely by echocardiography.

A 72-year-old woman presented with mild exertional dyspnoea of 3 years duration. She was normotensive and had no history of myocardial infarction or angina. Physical examination revealed no abnormal finding except a high-pitched systolic murmur best heard on lower left sternal border. Laboratory examination disclosed no abnormal finding of special note. The electrocardiogram was normal except incomplete right bundle branch block and chest roentgenogram did not demonstrate any sign of abnormality. An echocardiogram was ordered for further evaluation of abnormal heart sound and left ventricular function. Echocardiography demonstrated a small muscular-type ventricular septal defect (Supplementary data online, Video S1) of no haemodynamic significance (QP/QS = 1.2) and a mobile 2 cm × 1.5 cm cystic mass attached to atrial side of septal tricuspid leaflet (Figure 1A) which was prolapsing into right atrium during systole and the right ventricle during diastole (Supplementary data online, Video S2). Doppler echocardiography showed mild tricuspid regurgitation without right ventricular inflow obstruction due to cystic mass. Left ventricular systolic and diastolic functions were found to be normal. The mass was well circumscribed, had a thin wall, and echolucent core. For better characterization of the mass, contrast echocardiography was performed with agitated saline and showed a closed cyst with no bubbles entering into echolucent central core (Figure 1B and Supplementary data online, Video S3). Based on these characteristic findings, we made a diagnosis of blood-filled cyst of tricuspid valve, which is a rare condition in adults.

Discussion

Blood cyst of heart was first described in 1844 by Elsasser. They are usually congenital in origin, seen predominantly in infants, and located on the endocardium, particularly along the lines of closure of heart valves. During infancy, these cysts may disappear spontaneously, and therefore are rarely seen in older children and adults. The cysts are most commonly present on the atrioventricular valves, accounting for 96% of the cysts in infants, and are less often present on pulmonary and aortic valves. Cyst wall consists of endothelial cells and a thin layer of fibrous tissue that consists non-organized blood or seroanguinous fluid. Several theories have been entertained as a possible pathogenesis of blood cysts. Invagination at crevices of the valve surface into stroma by high ventricular pressure may result in blood-filled cyst formation. Subsequently, the mouths of the crevices may fuse to form a closed cyst. In support of a closed cyst in the present case, we could not see microbubbles entering inside the cyst due to systole. The differential diagnosis of right-sided cystic mass includes aneurysmatic atrioventricular septum, cavitating thrombus, right atrial myxoma, abscess formation as a sequel of endocarditis, hydatid cyst, and blood cyst. However, absence of intracystic calcification, homogenous pattern of cystic fluid, relation to the tricuspid valve, and clinical history strongly suggested a blood cyst in our patient.

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Symptomatic blood cysts causing valvular dysfunction should be excised. There is no consensus regarding the optimal management of asymptomatic cysts. Some authors have recommended surgical excision of these cysts in asymptomatic patients. Others suggest that asymptomatic cysts can be safely monitored by echocardiography, until there is a clinical indication for removal. Michelena et al. suggested that right-sided blood cysts may cause progressive tricuspid valve dysfunction over several years probably by exerting excess weight on the valve during systole that causes worsening prolapse and chordal rupture. Although the prior duration of blood cyst is unknown, this was not the case for our patient in whom valvular functions were found to be preserved. The lack of echocardiographic evidence of tricuspid valvular dysfunction and indication for repair of co-existent ventricular septal defect suggested a benign course for our patient, and therefore we planned to monitor the patient until there is a clear indication for surgery. Repeat echocardiography at 6 month and a year after demonstrated preserved tricuspid valvular function and no increase in cyst size.

In summary, we reported a case of a mobile blood cyst of tricuspid valve incidentally found in a patient with a small muscular septal defect. To our knowledge, this is the first case reported in the literature where blood cyst co-existed in an adult patient with ventricular septal defect. We believe that blood cysts can successfully be managed conservatively unless signs of valvular dysfunction ensue.

Supplementary data

Supplementary data are available at European Journal of Echocardiography online.

References