Case Report

Isolated tricuspid valve prolapse: identification using two- and three-dimensional echocardiography and transoesophageal echocardiography

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Abstract

We present a case of isolated prolapse of the tricuspid anterior leaflet in an asymptomatic 34-year-old man who was referred to our hospital for a routine check up. We performed two-and three-dimensional transoesophageal echocardiography (TEE). We found three-dimensional TEE a useful, non-invasive tool that can provide additional information to two-dimensional echocardiography in the assessment of tricuspid valve prolapse.

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Tricuspid valve prolapse is frequently found together with mitral valve prolapse, and rarely as an isolated occurrence.[1,2] Isolated prolapse of the valvular leaflets may cause significant tricuspid regurgitation.[3] We present a case of isolated prolapse of the tricuspid anterior leaflet in an asymptomatic 34-year-old man who was referred to our hospital for a routine check-up. He denied any blunt chest trauma such as a traffic accident.

Case report

On examination, there was a thrill and 4/6 pansystolic murmur in the tricuspid area. His blood pressure was 120/70 mmHg and the heart rate was regular and 90 beats per min. Electrocardiography showed sinus rhythm with right bundle branch block morphology. A 24-hour rhythm Holter examination was unremarkable.

Echocardiographic evaluation showed an isolated prolapse of the tricuspid anterior leaflet with severe tricuspid regurgitation and right-sided heart chamber enlargement (Fig. 1). The left heart chamber sizes and systolic function were normal. Transoesophageal echocardiography (TEE) was performed to better define the tricuspid valve structure. TEE also revealed isolated anterior tricuspid valve prolapse with severe tricuspid regurgitation and patent foramen ovale (PFO) with atrial septal aneurysm (Fig. 2). The other valves were structurally and functionally normal. We also performed three-dimensional TEE (Fig. 3).

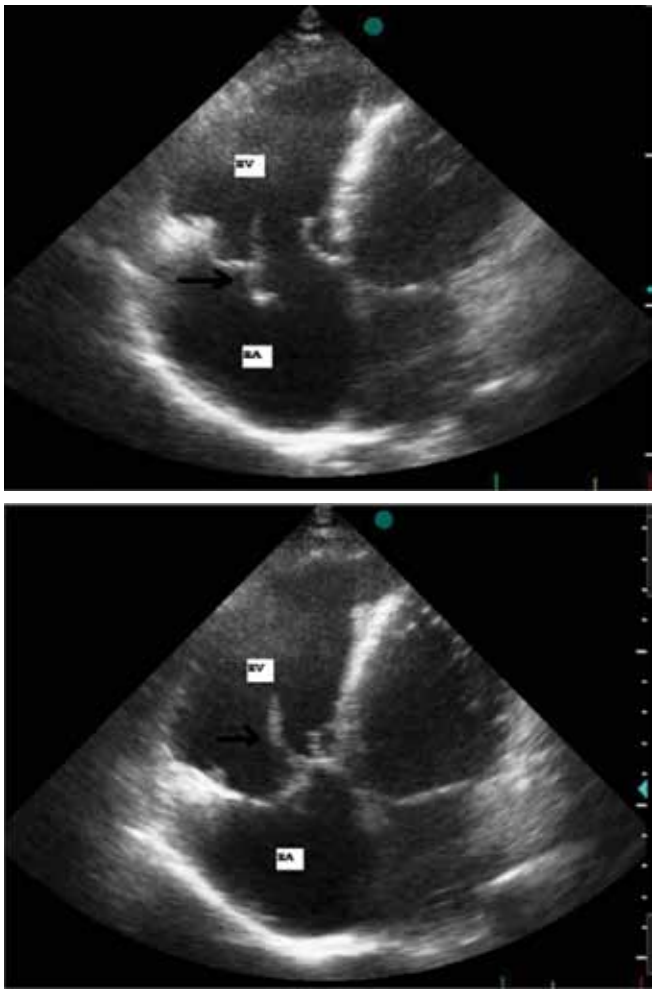

Fig. 1. Apical four-chamber view showing a prolapse of the anterior leaflet. RV: right ventricle, RA: right atrium.

Due to the existence of a PFO and severe tricuspid regurgitation, surgery was suggested. The tricuspid annulus was repaired using a Carpentier-Edwards ring. A tissue patch was used to repair the PFO.

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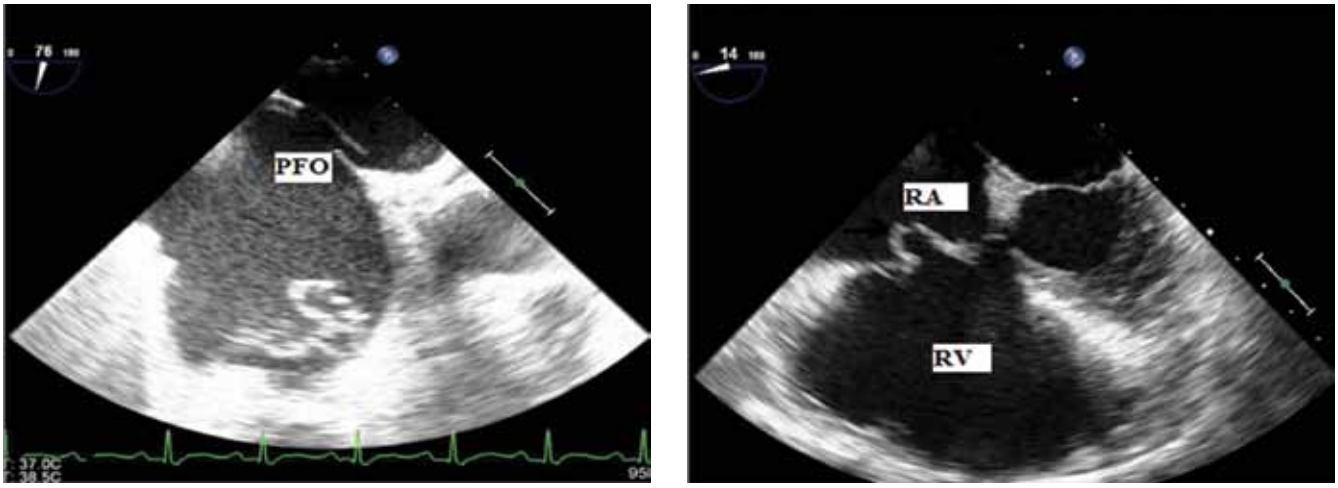

Fig. 2. A transoesophageal echocardiography (TEE) showing patent foramen ovale and a prolapse of the anterior leaflet. RV: right ventricle, RA: right atrium, PFO: patent foramen ovale.

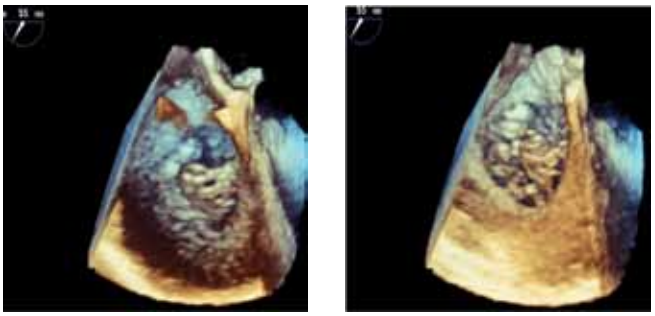

Fig. 3. Three-dimensional TEE.

Discusssion

Tricuspid valve prolapse is commonly associated with mitral valve prolapse and is rarely an isolated occurrence. Isolated severe tricuspid regurgitation can occur from isolated prolapse of the valvular leaflets.[1] Two-dimensional echocardiography using multiple views is an appropriate technique for the demonstration of tricuspid valve prolapse. The posterior leaflet is seen only on the long-axis parasternal view.[4] As obtaining this view is difficult, transoesophageal echocardiography is a good tool to diagnose prolapses. We performed TEE to better define the tricuspid valve structure and to exclude other potential aetiologies of right-sided heart chamber enlargement.

In the literature, if the tricuspid regurgitation is severe, the prognosis is poor, even in asymptomatic patients.[5] Enlargement of the right ventricle in the presence of tricuspid regurgitation is predictive of a poor outcome. Surgical intervention should be performed in such patients since operative mortality is low. It also provides symptomatic improvement. Surgical repair of the tricuspid valve is preferred to valve replacement.[5]

In the recent literature, Nishimura, *et al*.[6] reported that three-dimensional echocardiography is useful for the evaluation of tricuspid valve structure and function. They concluded that three-dimensional echocardiography gives valuable information before surgery about abnormalities of the tricuspid valve and other structures.

Three-dimensional transoesophageal echocardiography is a new diagnostic tool. In one report, the diagnostic use of the transoesophageal technique with three-dimensional modality obtained additional information in valvulopathies.[7] Three-dimensional TEE may be a useful non-invasive tool that could give additional information to two-dimensional echocardiography in the assessment of tricuspid valve prolapse.

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