

IMAGE IN CARDIOLOGY

## Perimembranous ventricular septal defect vegetation in a patient with right- and left-sided infective endocarditis



### Comunicação interventricular perimembranosa com vegetação em doente com endocardite infecciosa do coração esquerdo e direito

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A 27-year-old-man was admitted with fever and elevated inflammatory parameters, attributed to multiple small lung abscesses. At admission a continuous systolic–diastolic murmur was heard from the left sternal edge to the apex. Workup included transthoracic echocardiography, which revealed a restrictive perimembranous ventricular septal defect (VSD) (velocity 4.89 m/s) partly covered by a previously unknown typically aneurysmal tricuspid valve (TV) (Figure 1A and B). A vegetation was present on the atrial side of the TV (Figure 1C), but there was also an image suggestive of vegetation attached to the VSD (white arrow). Aortic valve involvement with two vegetations and severe regurgitation was also demonstrated (Figure 1D).

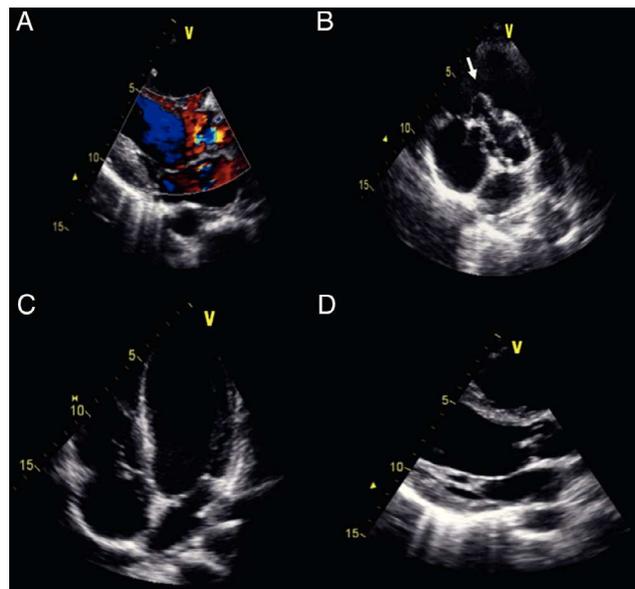
The unusual presence of vegetation at the VSD and the characteristic prolapse of the right aortic cusp with the attached vegetation (Figure 2) were confirmed by transesophageal echocardiography.

Beside lung abscesses from embolization of the right-sided vegetations, left heart failure symptoms developed. Blood cultures were negative due to prior antibiotic administration. After 25 days of empirical antibiotic therapy for infectious endocarditis (IE) surgery was performed. Debridement of vegetations and infected tissue, followed by replacement of the aortic valve by a mechanical valve, tricuspid valve remodeling annuloplasty and VSD repair were performed. Recovery from surgery was uneventful and six weeks of antibiotic therapy were completed.

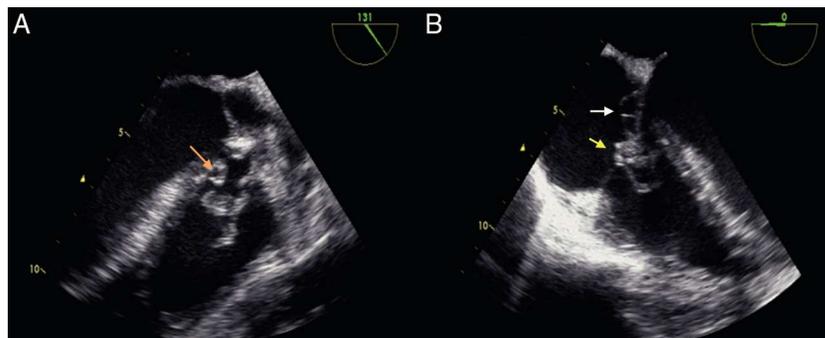
IE with involvement of left- and right-sided valves owing to a perimembranous VSD is an unusual presentation and requires a high degree of suspicion, particularly if the presence of congenital heart disease is unknown. Vegetations attached to the VSD are particularly difficult to diagnose.

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**Figure 1** Transthoracic echocardiography. (A) Parasternal long-axis view with color Doppler disclosing a left-to-right shunt through a ventricular septal defect (VSD). (B) Parasternal short-axis view showing lack of support of the aortic valve, leading to a diagnosis of perimembranous VSD, vegetation attached to the atrial side of the tricuspid valve, and aneurysmatic image of the tricuspid valve, difficult to distinguish from a vegetation attached to the membranous portion of the VSD. (C) Apical 4-chamber view confirming the presence of the vegetation attached to the atrial side of the tricuspid valve. (D) Parasternal long-axis view displaying the vegetations attached to the right and non-coronary aortic cusps.



**Figure 2** Transesophageal echocardiography (TEE). (A) TEE at 131° disclosing a vegetation attached to the VSD protruding into the right ventricle (orange arrow) with prolapse of the right aortic cusp and the vegetation attached to the VSD. (B) TEE at 0° shows the aneurysm of the septal leaflet of the tricuspid valve (white arrow) and the vegetation on the atrial side (yellow arrow).

## Ethical disclosures

**Protection of human and animal subjects.** The authors declare that no experiments were performed on humans or animals for this study.

**Confidentiality of data.** The authors declare that they have followed the protocols of their work center on the publication of patient data and that all the patients included in the study received sufficient information and gave their written informed consent to participate in the study.

**Right to privacy and informed consent.** The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

## Conflicts of interest

The authors have no conflicts of interest to declare.