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Left sided accessory pathway ablation in a patient with mitral valve blood cyst. An example of the usefulness of intracardiac echocardiography in monitoring pediatric ablation procedures

Short title: Usefulness of ICE during ablation procedure in a patient with mitral valve blood cyst

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Accessory pathway ablation is the most common procedure performed in pediatric electrophysiology (EP) laboratories. Recently, intracardiac echocardiography (ICE) has been recommended as a valuable tool to address technical challenges in EP procedures, enhance safety, and reduce radiation exposure specifically in patients with congenital heart defects [1, 2]. Mitral valve blood cysts are rare congenital heart defects that, while typically benign, may complicate intracardiac catheterization procedures [3, 4].

We present the case of a 17-year-old female with recurrent, documented supraventricular tachycardias. Echocardiography revealed a blood cyst on the anterior mitral valve leaflet, located in the ventricular portion of the leaflet. The cyst measured 17 × 18 mm and did not cause any disturbances in mitral valve or left ventricular outflow tract blood flow. The resting 12-lead electrocardiogram showed no signs of preexcitation. The patient and her family chose to proceed with an ablation procedure. Given the potential thromboembolic risk

associated with catheter-induced injury to the cyst, the procedure was planned with the use of ICE to enhance safety.

The procedure was conducted under general anesthesia. An EP study with a 3D mapping system was performed, and ICE monitoring was employed throughout. Atrial stimulation revealed signs of preexcitation typical for a left-sided accessory pathway and AVRT with eccentric atrial activation was reproducibly induced. A transseptal approach was then utilized, and careful mapping of the mitral annulus revealed the earliest ventricular activation in the postero-lateral region. Radiofrequency ablation at this site immediately eliminated the preexcitation. The effect remained stable during the observation period, and subsequent stimulation confirmed successful ablation of the accessory pathway.

Throughout the procedure, catheter positioning was closely monitored to avoid any injury to the cyst. Post-procedural echocardiography showed no changes in the cyst's appearance, no pericardial effusion, and normal left ventricular size and function. The electrocardiogram post-ablation showed sinus rhythm without preexcitation.

This case underscores the utility of ICE in pediatric ablation procedures, particularly in patients with structural heart abnormalities. Careful echocardiographic monitoring during ablation in a patient with a mitral valve blood cyst is crucial for preventing complications.

Article information

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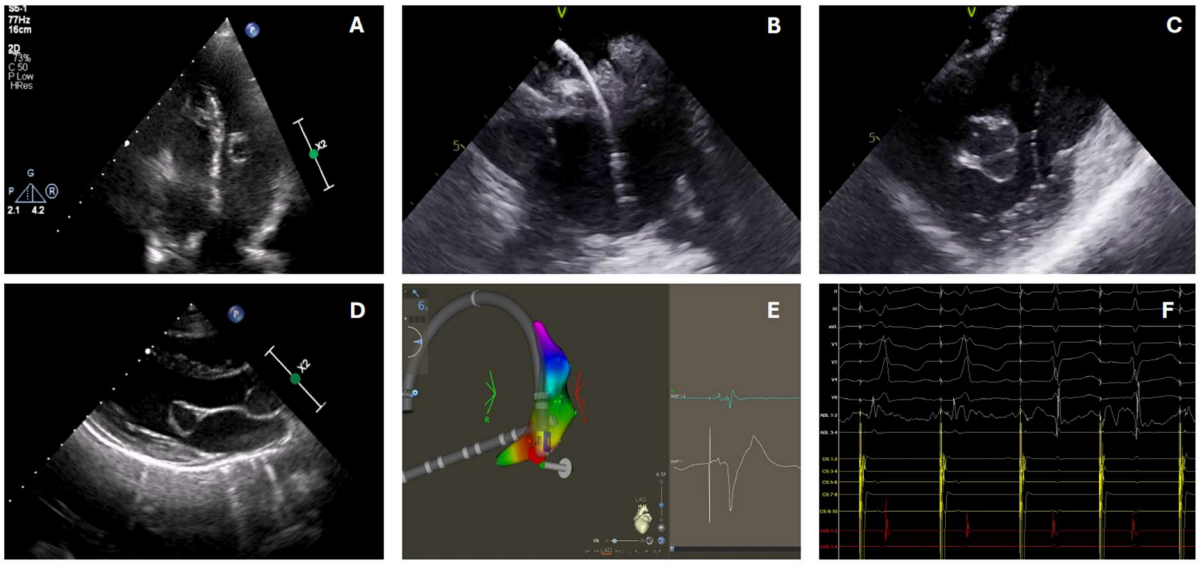

Figure 1. A and **D.** Transthoracic echocardiography images depicting a mitral valve blood cyst. **B** and **C.** Intracardiac echocardiography images showing the ablation catheter and mitral blood cyst. **E.** 3D mapping system image showing the lateral aspect of the mitral annulus and the site of successful ablation. **F.** Intracardiac tracings illustrating the radiofrequency application and the resolution of preexcitation features