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One in one hundred thousand chance: The importance of echocardiography before routine atrial flutter cardioversion

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One in one hundred thousand chance: The importance of echocardiography before routine atrial flutter cardioversion

Short title: Unexpected finding in echocardiography before cardioversion

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In December 2011, a 50-year-old woman with history of hypertension was admitted to the Department due to first-in-life atrial flutter with European Heart Rhythm Association class III symptoms. The episode lasted for only 4 hours and prior to electrical cardioversion, routine transthoracic echocardiography was performed. Because of its result, the transesophageal echocardiography (TEE) was additionally conducted. The exams showed a giant atrial tumor filling both atrial cavities — 75 × 76 mm, partially obstructing tricuspid and mitral orifices (Figure 1A and D; Supplementary material, *Video S1*). We suspected that the tumor had grown from the roof part of interatrial septum. The structure of the tumor was non-homogenous with fibrosis, calcification and cysts within. The surface of the tumor was smooth, without polyps or fragmentation. Doppler exam supported by contrast echo revealed intra-tumor flow (Figure 1B–C). The picture suggested hemangioma, however in differential diagnosis other tumor origins such as myxoma, angiosarcoma or teratoma were considered too.

The patient was qualified for an urgent open-heart surgery, which confirmed the echo findings. Intraoperatively, the tumor turned out not to be fully resectable — it infiltrated the interatrial septum, surroundings of coronary sinus, the base of heart and the left ventricle. The

tumor was partially excised and resected areas were reconstructed with a pericardial patch. Histopathological examination of multiple soft tissue fragments (totally 53 × 25 mm) confirmed hemangioma. Due to extension of the resection, a complete atrioventricular block emerged and six days later DDDR pacemaker was implanted.

The echocardiogram after reconstruction revealed a small fistula to the non-resected part of the tumor, small aortic insufficiency, moderate tricuspid and mitral regurgitation. The mitral regurgitation was caused not only by coaptation defect, but also by a small post-resection basal A2 segment tear (Figure 1E–F).

Nowadays, after 14 years we admitted the patient due to heart failure symptoms with worsening of mitral and tricuspid regurgitations to severe and progression of aortic insufficiency to moderate stage. The pharmacotherapy was modified, but in case of unsatisfactory results the transcatheter therapies or even heart transplant is to be considered.

Analyzing the complications of the open-heart surgery, one may question the feasibility of such intervention. In the bigger picture, the profit and loss account was positive. For years the patient remained in stable condition with no notable tumor expansion in systematically performed echocardiographic exams. In a long-term perspective the patient avoided serious complications that might have occurred if the tumor was left untreated, such as rapidly progressing congestive heart failure, embolic events or even sudden cardiac death.

It is noteworthy that a mass seemingly located in the right atrium in TEE can sometimes be found in the pericardial space instead. A recently published clinical vignette by Kalinic et al. [1] highlights the limitation of TEE in definitive pinpointing the precise location of a cardiac tumor. Most cardiac hemangiomas are asymptomatic, although occasional alterations in hemodynamics and local invasion can cause cardiac insufficiency [2]. There are no definitive guidelines regarding when to operate nor the best surgical techniques for atrial hemangiomas [3]. Rare complications such as conduction disturbances, valve regurgitations and cardiac fistulas should always be sought for and addressed accordingly [4].

To conclude, every case of cardiac hemangioma should be treated accordingly to individual clinical presentation. Considering possible risks of surgical intervention, a thoughtful decision should be made whether to operate or not. In our case, the accidentally discovered tumor was successfully treated with a satisfactory long-term follow-up.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/polish_heart_journal.

Article information

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REFERENCES

1. Kalinic N, Cvjetkovic Tomanic T, Redzek A, et al. Pericardial hemangioma: An extremely rare cardiac tumor. Pol Heart J. 2024; 82(1): 105–106, doi: 10.33963/v.kp.98422, indexed in Pubmed: 38230478.
2. Li W, Teng P, Xu H, et al. Cardiac hemangioma: A comprehensive analysis of 200 cases. Ann Thorac Surg. 2015; 99(6): 2246–2252, doi: 10.1016/j.athoracsur.2015.02.064, indexed in Pubmed: 25921258.
3. Miao H, Yang W, Zhou M, et al. Atrial hemangioma: A case report and review of the literature. Ann Thorac Cardiovasc Surg. 2019; 25(2): 71–81, doi: 10.5761/atcs.ra.18-00207, indexed in Pubmed: 30890668.
4. Thilak R, Sivanesan A, Munuswamy H, et al. A giant right atrial hemangioma — case report. Cureus. 2022; 14(4): e24622, doi: 10.7759/cureus.24622, indexed in Pubmed: 35664397.

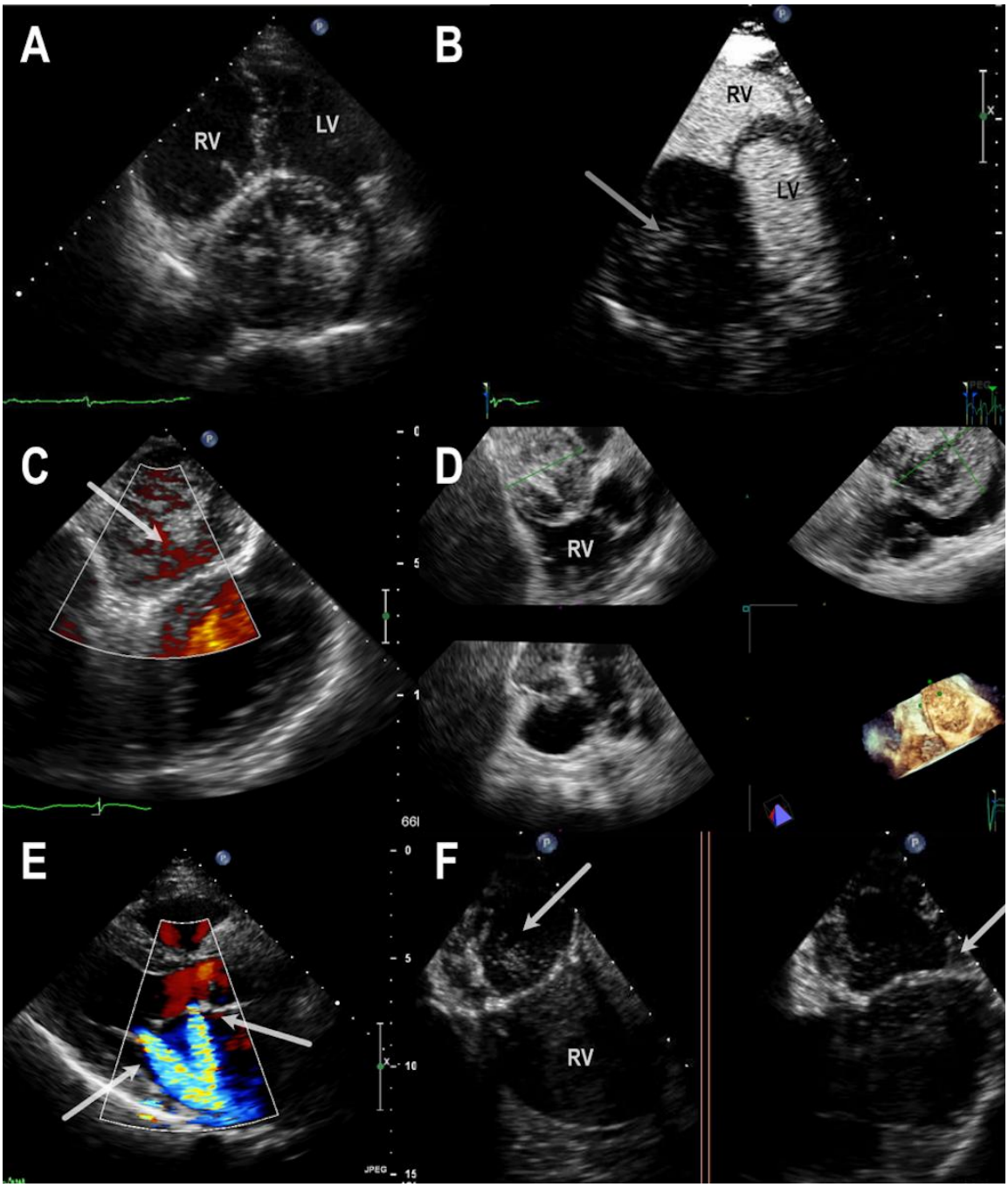

Figure 1. A. A 2D TTE 4-chamber apical view of the atrial tumor **B.** Contrast TTE revealing intra-tumor flow **C.** TTE Doppler exam revealing intra-tumor flow **D.** A 2D and 3D TEE view of the atrial tumor **E.** TTE Doppler exam of post-resection mitral regurgitation caused by basal A2 segment tear. **F.** Communication between the remaining cavity after tumor resection and the left atrium confirmed by contrast echocardiography

Abbreviations: RV, right ventricle; TEE, transesophageal echocardiography; TTE, transthoracic echocardiography