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An unexpected diagnosis in a patient with two left atrial pathological masses found by echocardiography

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A 63-year-old female patient after kidney transplantation, treated with immunosuppressive drugs, with permanent atrial fibrillation on acenocoumarol, was admitted to verify two pathological structures detected in the giant left atrium (LA) by routine transthoracic echocardiography (TTE) (*Figure 1A*). She presented with fatigue and periodic chest pain in recent weeks. During hospitalization, a recurrent fever reaching 39°C and an elevated CRP level of 154mg/dl were observed. Initially, empiric antibiotic therapy was ordered. Serial blood and urine cultures were negative. The INR values measured several times were therapeutic. Transoesophageal echocardiography (TEE) confirmed two large pathological masses in the LA located opposite each other, both approximately 32-33 x 24mm in size (*Figure 1B*). The first mass was oval, attached to the postero-lateral wall and highly mobile (*Figure 1C*), and the other was irregular in shape, localized next to the right upper pulmonary vein outlet (*Figure 1D*). The tumors did not originate from the interatrial septum. No evidence of valvular vegetations were found. Initially cardiac myxomas or LA thrombi were suspected. Importantly, there was also no evidence of mitral stenosis or a formed thrombus in LA appendage (*Figure 1E*). The pathological lesions from LA, removed during surgery (*Figure 1F*) were suggestive of thrombi.

The histological examination revealed the presence of mycelia—numerous *Aspergillus fumigatus* colonies. Additionally, abdominal ultrasound showed hyperechogenic masses in the transplanted kidney, corresponding to mycotic involvement. No significant abnormalities in the lungs were confirmed. Finally, the diagnosis of fungal endocarditis was established. Treatment with i.v. voriconazole, amphotericin B and micafungin was initiated. Unfortunately, within a month after the surgery the patient developed multiorgan failure, and died despite the therapy.

The most common cardiac tumor located in the LA is myxoma [1]. Myxomas are pedunculated and usually attached to the interatrial septum. They may be multiple in up to 5% [1]. Left atrial thrombi are usually found in the appendage in patients with atrial fibrillation, particularly in case of subtherapeutic doses of anticoagulants. They can also appear in an enlarged LA cavity, such as in mitral stenosis [1,2]. The final diagnosis in our patient was unexpected, because fungal endocarditis caused by *Aspergillus fumigatus* and located in LA is very rare. In a healthy population a natural immunity to *Aspergillus fumigatus* infection is observed, however, there are cases of immunocompetent patients with aspergillosis of the left heart [3]. Aspergillosis occurs often in immunocompromised patients, such as renal transplant patients or haematological patients, and contributes to high mortality in both groups [4]. Fungal lesions are usually found in the lungs, however, an infection can spread to other
organs. It may affect heart chambers, as well as heart valves [4]. The echo images are not specific. It is often difficult to differentiate a thrombus from a neoplastic mass by echocardiography, therefore, cardiac magnetic resonance may be a helpful tool in this situation [5]. Endocarditis caused by *Aspergillus fumigatus* can be a deadly disease and requires a multidisciplinary approach in many cases.

**References**


Figure 1. Pathological masses in the left atrium;
A- two pathological structures in the giant left atrium (39cm², 180ml), located opposite each other (arrows), TTE, short axis view.
B- transoesophageal two-dimensional image of these structures (arrows);
C- an oval mass attached to the postero-lateral wall of left atrium (arrow), TEE.
D- an irregularly shaped mass (yellow arrows) localized just next to the right upper pulmonary vein outlet (red arrows), two/three-dimensional TEE.
E- spontaneous echocardiographic contrast in the left atrial appendage (arrow), TEE.
F- pathological lesions removed from the left atrium by surgeons.
Abbreviations: Ao- aorta, AV-aortic valve, IAS-interatrial septum, LA-left atrium, LAA- left atrium appendage, LV-left ventricle, RA-right atrium, RUPVO- right upper pulmonary vein outlet, TEE- transoesophageal echocardiography, TTE- transthoracic echocardiography.