CASE PRESENTATION

Left atrial mural septic metastasis complicated by endogenous endophthalmitis

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Abstract: Infective endocarditis remains a diagnostic challenge, as there are no pathognomonic signs and symptoms for the disease. Intracardiac vegetations are usually found on cardiac valves, but mural, non-valvular vegetations may also be seen, although less frequently. We present the case of a patient with isolated left atrial mural endocarditis complicated with endogenous endophthalmitis, who was successfully treated with antibiotherapy.
Keywords: endocarditis, mural vegetation, septic embolism, endogenous endophthalmitis

Rezumat: Endocardita infecţioasă rămâne o provocare diagnostică, întrucât nu are semne şi simptome patognomonice. Vegetaţiile intracardiace se găsesc de obicei ataşate structurilor valvulare, însă rareori se pot întâlni şi vegetaţii murale. Prezentăm cazul unei paciente cu endocardită murală izolată de atriu stâng complicată cu endoftalmită endogenă, care a fost tratată cu success cu antibioterapie.
Cuvinte cheie: endocardită, vegetaţie murală, embolism septic, endoftalmită endogenă

INTRODUCTION

Despite improvements in diagnostic and therapeutic strategies, morbidity and mortality in infective endocarditis remain high[1]. An accurate early diagnostic is not possible when a high index of suspicion is lacking, as most patients with infective endocarditis have only few of the classical clinical hallmarks of the disease.

Intracardiac masses are rare, but they must be thoroughly evaluated once they are identified, to avoid the risk of systemic embolization and its consequences, including death. Vegetations in infective endocarditis tend to colonize intracardiac devices, the low pressure side of the valve structure or the shunt lesions, while mural endocarditis is generally associated with valvular endocarditis; however, isolated mural vegetations may be encountered[2,3], making the differential diagnosis more challenging. Whether isolated mural vegetations are unusual or just underestimated findings still remains to be determined.

CASE REPORT

A 55 year-old obese female with poorly controlled diabetes presented to our unit with a 2 week-history of unexplained fever (up to 39°C). She had poorly controlled diabetes as a consequence of her constant refusal of insulin therapy and otherwise she had no risk factors for immunosupression. She had been complaining of fever for 2 weeks, for which she was prescribed antipyretics and adequate hydration. She was apyretic on admission and the clinical examination was unremarkable, except for tachycardia at 110 bpm. The lab workout showed an elevated white blood cell count (29000/mm^3) and a high ESR (50 mm/h), with severe hyperglycemia. Urine culture came back negative and her chest X-ray was normal. Her abdominal ultrasound revealed 3 liver masses and we raised the suspicion that these were septic emboli.

A transthoracic echocardiogram (TTE) was performed, which showed a hypermobile, isolated left atrial mass (Figure 1), with normal morphology and function of all cardiac valves. The left ventricular function, the interatrial- and interventricular septum were normal and there was no pericardial effusion. The transoesophageal echocardiography (TOE) confirmed the presence of a 17/14 mm sessile, mobile, polylobulated left atrial mass attached to the anterior wall of the left atrium, in the vicinity of the aortic sinotubular junction (Figure 2-5). No other cardiac abnormalities were noted.

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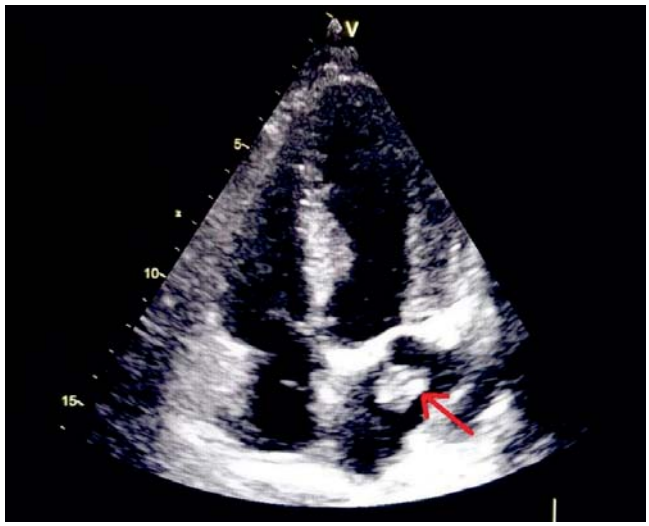

Figure 1. TTE, apical 4-chamber view. Visualization of a left atrial mass (red arrow).

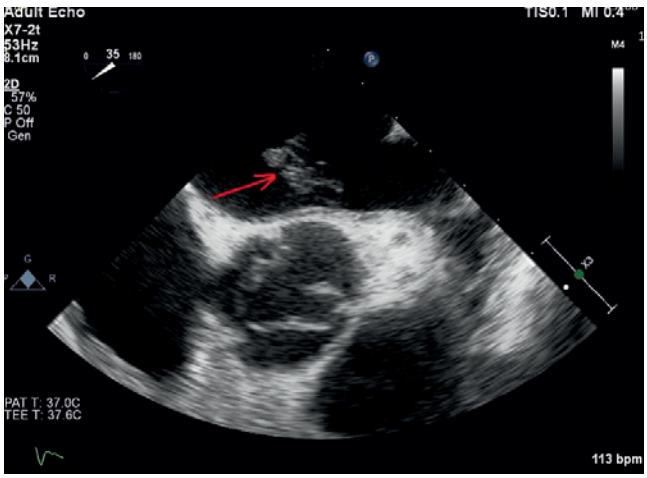

Figure 2. TOE, mid-esophageal aortic valve short-axis view. Left atrial vegetation (red arrow).

The full-body CT scan confirmed the liver masses, highly suggestive of abscesses; there were no other septic emboli in the brain or in other abdominal organs. 24 hours after the admission, the patient's right eye became red and painful (Figure 6), and the ophthalmologic evaluation confirmed the diagnosis of endogenous endophthalmitis. Repeated blood cultures came back positive for *Klebsiella* spp.

Taking the whole picture into account, with fever, ocular and hepatic emboli, intracardiac mass and persistently positive blood cultures, our patient fulfilled the Duke criteria for infective endocarditis. At that point, as there was no clear indication for surgery[1], a multidisciplinary decision was taken together with the infectious disease specialist in favor of systemic antibiotherapy. Intravenous amoxicillin (2 g every 4 hours)

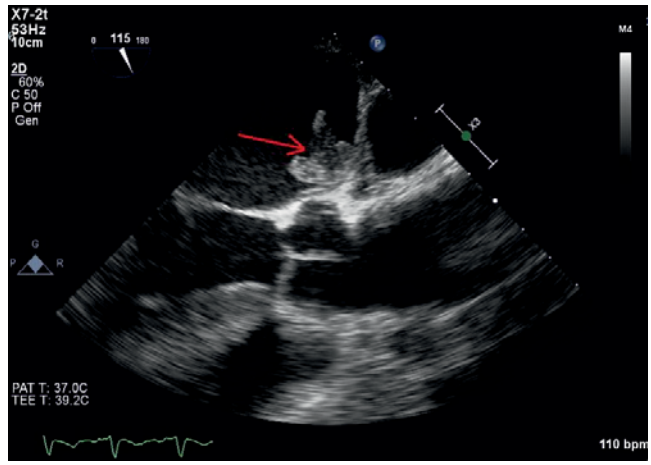

Figure 3. TOE, mid-esophageal aortic valve long-axis view Left atrial polylobulated vegetation (red arrow).

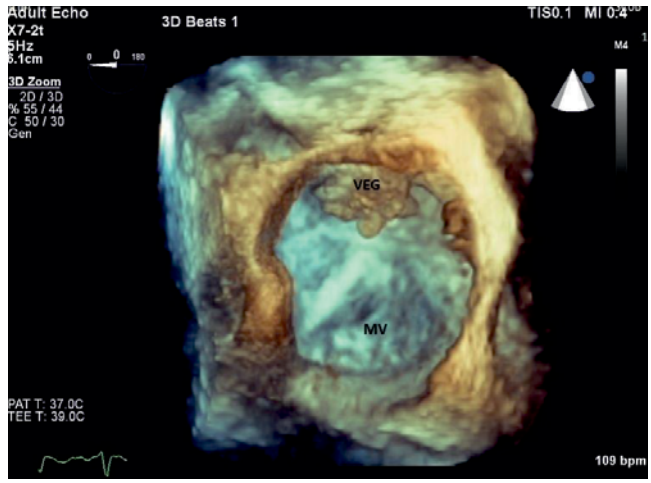

Figure 4. TOE. 3D visualization of the left atrial vegetation. VEG=vegetation, MV=closed mitral valve.

plus a synergistic dose of gentamicin were given for 6 weeks, according to the antibiogram. The clinical course was favorable; the patient remained apyretic, the white blood cell count came back to normal and the ocular signs gradually diminished during the first month. After completing her course of antibiotics, the patient underwent a follow-up echocardiogram, which revealed the complete disappearance of the left atrial mass. The follow-up abdominal CT scan showed the disappearance of the liver abscesses as well. There was no clinical suggestion of recurrent embolization during six-month follow-up.

DISCUSSION

Predisposing factors for endocarditis in patients without previous heart disease are: diabetes, renal failure, malignancy, severe chronic obstructive pulmonary disease, immunosuppressive therapy and intravenous

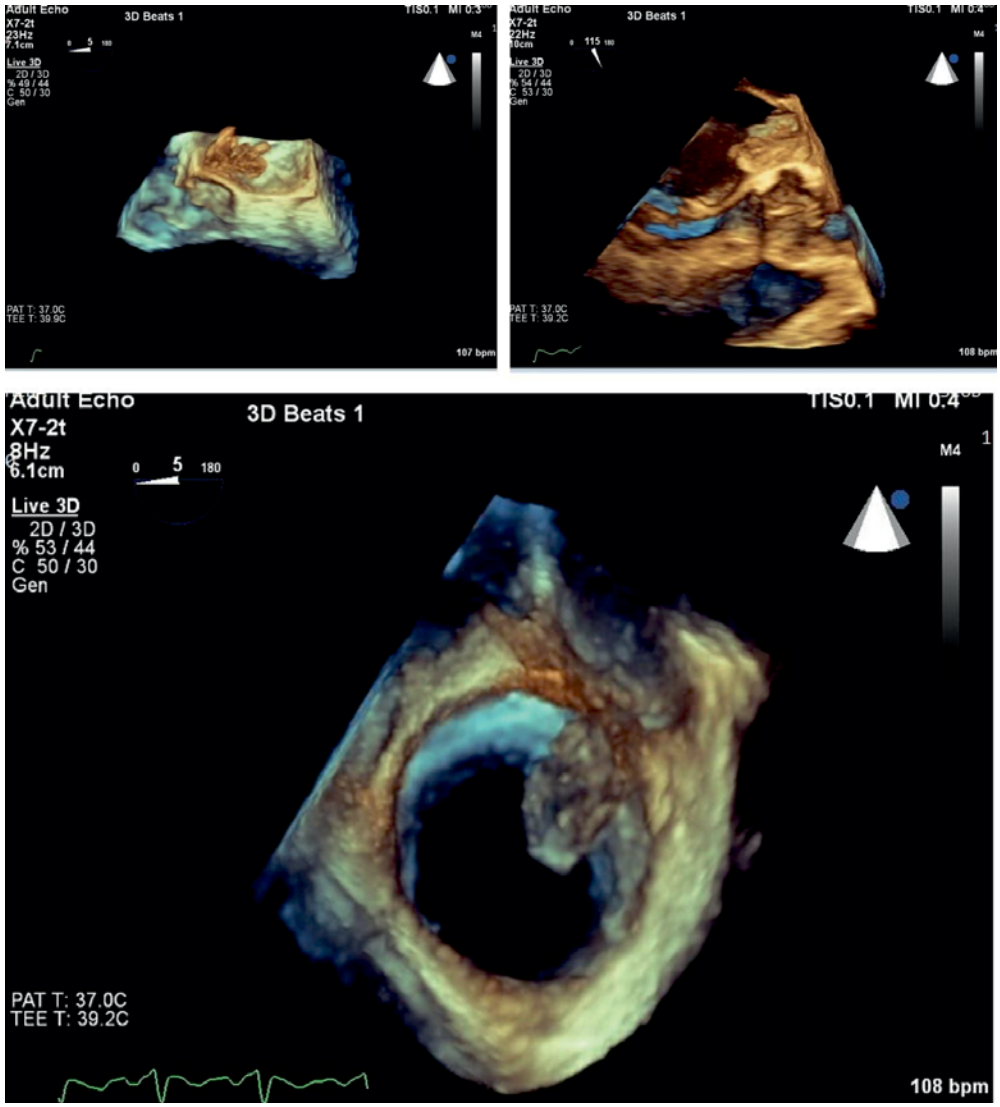

Figure 5. TOE. 3D visualization of the left atrial vegetation in multiple views.

drug use[4]. *Klebsiella* is not a typical etiologic agent of infective endocarditis, the non-HACEK Gram-negative bacilli endocarditis being usually encountered in immunosupressed patients. Our patient had poorly controlled diabetes as a sole predisposing factor for infective endocarditis. No obvious source of *Klebsiella* bacteremia could be found in our patient. She had no recent hospitalization requiring long-term intravenous catheters, no recent previous history of either respiratory or urinary tract infection and two repeated urine cultures came back negative.

The differential diagnosis of intracardiac masses must include thrombi and tumors. Our patient had no predisposing conditions for atrial thrombosis, the

Figure 6. Endophthalmitis of the right eye.

left atrial dimensions were normal and there was no spontaneous echo contrast either in the atrium or in the left atrial appendage. Atrial myxomas are the most frequent primary tumors; they are generally attached to the interatrial septum at the site of the fossa ovalis[5]. Even though myxomas may be – rarely – attached to the anterior atrial wall, our patient's outcome with complete disappearance of the atrial mass under antibiotherapy confirmed that it was a septic mass and not a tumor.

Mural infective endocarditis usually occurs in association with valvular vegetations, either as a consequence of jet lesions or by direct spreading of the infection from adjacent tissues[6,7]. Mural seeding usually involves previously abnormal endocardium affected by mural thrombi, fibrosis, jet lesions, congenital defects, primary cardiomyopathies, pacemaker leads or radiofrequency ablation[8]. It is difficult to establish the sequence of events leading to such a rare presentation in our patient. A possible theory is direct inoculation of bacteria at the site of an endocardial lesion; however, she had no obvious predisposing factors for atrial endocardial injury. Since the atrial mass occurred in the absence of co-existing valvular vegetations, we assumed that it was actually a mural septic metastasis with the same etiopathogenic mechanism as the ocular and hepatic emboli.

Endogenous endophthalmitis is a rare complication of infective endocarditis, which occurs when bacteria reach the eye by hematogenous spreading from a remote source, causing inflammation of the intraocular tissues[9]. Most cases of endophthalmitis are exogenous, following ocular surgery of trauma. Endogenous endophthalmitis accounts for a small proportion of all cases of endophthalmitis, the most frequent underlying medical condition being infective endocarditis, followed by urosepsis, abdominal abscesses, meningitis and septic arthritis[10]. The condition is most often unilateral, and the right eye is more frequently involved than the left, possibly because the right carotid artery provides a relatively direct route to the eye[11]. It requires systemic antibiotic treatment, as there is no clear evidence regarding the benefit of intravitreal antibiotics[12].

The true incidence of isolated mural endocarditis is not known and its complications are unpredictable. The current guidelines 1 provide clear recommendations for the surgical management of valvular, but not mural infective endocarditis. It is generally accepted that surgery must be performed in clinical scenarios such as obstructive or growing vegetations, myocardial abscesses, heart failure or recurrent embolism despite antibiotic therapy. Previous cases of uncomplicated mural endocarditis treated with antibiotherapy alone have been reported[13,14], and our patient had a favorable clinical outcome with medical treatment only.

Patients with fever of unknown origin should undergo TTE in order to carefully exclude infective endocarditis as an etiology for the patient's symptoms. If TTE is inconclusive, the improved spatial resolution of TOE enables an optimal evaluation of such patients[15]. When screening for septic sources, 3D TEE allows detailed visualization of all cardiac structures in different views and planes, thus minimizing the risk of delayed diagnostic or misdiagnosis.

CONCLUSION

Fever and septic emboli in major organs are classical hallmarks of infective endocarditis; the latter are sometimes the first manifestation of the disease, thus making a comprehensive echocardiographic evaluation irreplaceable for an accurate diagnostic. Mural septic metastases, although unusual, should be considered and carefully excluded among all cases of suspected infective endocarditis, even when all cardiac valves appear to be perfectly normal. This also requires a high index of suspicion since isolated mural vegetations are usually silent on cardiac examination. Even though the management of endocarditis often requires cardiac surgery, some cases can be successfully treated with antibiotherapy alone.

Conflict of interest: none declared.

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