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Fait clinique

Left atrial ball thrombus: a particularly emboligenous anatomical shape

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Keywords: Mitral stenosis, ball thrombus, left atriam, case report, Madagascar

Abstract : Left atrial ball thrombus is a rare complication of rheumatic mitral stenosis. We report on a patient with a left atrial ball thrombus combined with rheumatic mitral stenosis, which was detected during echocardiographic and a paroxysmal atrial fibrillation in the context of an etiological assessment of an ischemic stroke. The surgical removal of the thrombus with concomitant treatment of the cause is the gold standard of therapeutical management. Echocardiographic is of paramount importance in the diagnosis and the management in order to avoid embolic events and sudden death

Mots-clés : Sténose mitrale, Thrombus flottant, Oreillette gauche, Cas clinique, Madagascar

Résumé : Le thrombus flottant de l'auriculaire gauche est une complication rare de la sténose mitrale rhumatismale. Nous rapportons le cas d'un patient présentant un thrombus flottant de l'auriculaire gauche associé à une sténose mitrale rhumatismale, détecté lors d'une échocardiographie et une fibrillation auriculaire paroxystique dans le cadre d'un bilan étiologique d'un accident vasculaire cérébral (AVC) ischémique. L'ablation chirurgicale du thrombus avec le traitement concomitant de l'étiologie demeure le « gold standard » dans la prise en charge thérapeutique. L'échocardiographie est d'une importance capitale dans le diagnostic et la prise en charge afin d'éviter les événements emboliques et la mort subite.

Tirés à part : Rakotonoel RR

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Introduction

Left atrial ball thrombus is a rare condition that was first described on autopsy in 1814. Left atrial ball thrombus is predominantly associated with mitral valve disease (1). The frequency of embolic events in patients with ball thrombi is high 54% (2), and can lead to sudden death (3).

We report on a patient with a left atrial ball thrombus combined with rheumatic mitral stenosis, which was detected during echocardiographic in the context of an etiological assessment of an ischemic stroke.

Case Report

A 49-year-old man presented to the emergency department with right-sided weakness and aphasia. He had no history of hypertension, diabetes mellitus, and dyslipidemia. Since six months, he presented a worsening fatigue and exertional dyspnea.

On admission, the physical examination revealed broca's aphasia, right hemiparesis and facial weakness. His blood pressure was 90/60 mm Hg, heart rate was 120 beats per minute, respiratory rate was 30 breaths per minute, and temperature was 37.2°C. General appearance was cachectic (height 170 cm, weight 45 kg). The patient presented with a NYHA III dyspnea. On examination, the patient had a poor hygiene of teeth, a right parasternal heave, a loud S1, an opening snap, and a high-pitched diastolic rumble at the apex.

Twelve-lead electrocardiography indicated sinusal rhythm, but 24-Hour Holter monitoring revealed a paroxysmal atrial fibrillation. Laboratory tests revealed high levels of high-sensitivity troponin I (450 ng/L), and D-dimer (3000 µg/L). Chest radiography revealed an increase in the size of the cardiac shadow, convexity of the left atrial appendage just below the main pulmonary artery, and double density sign.

Computed Tomography Scan of the brain diagnosed a large ischemic infarction involving the territory of the left middle cerebral artery.

Transthoracic echocardiography showed a hockey-stick shape and thickened anterior mitral valve leaflet, restricted posterior mitral valve leaflet, fusion of chordal and calcification on parasternal long axis view, and a large free-floating ball-valve thrombus (4.24 cm in diameter) with anti-clockwise spinning movement in the dilated atrium (60 mm) (Panels A and B). Short axis view showed a several mitral stenosis with a valve area of 0.9 cm2 (Panel C). Apical four chamber view showed the ball thrombus which partially obstructed the mitral valve intermittently (Panel D). The left ventricular ejection fraction was normal (60% Biplane Simpson), with normal left ventricular filling pressure and pulmonary artery systolic pressure (25 mmHg).

Final diagnosis was rheumatic mitral valvular stenosis disease with paroxysmal atrial fibrillation complicated of ball thrombus and an ischemic stroke.

After initial stabilization, the patient was treated with oral anticoagulant therapy and physical therapy which gradually improved his general condition. Although emergency surgery is usually indicated, the replacement of the mitral valve with removal of the ball-valve thrombus will be indicated 6 months later, due to insufficient technical resources.

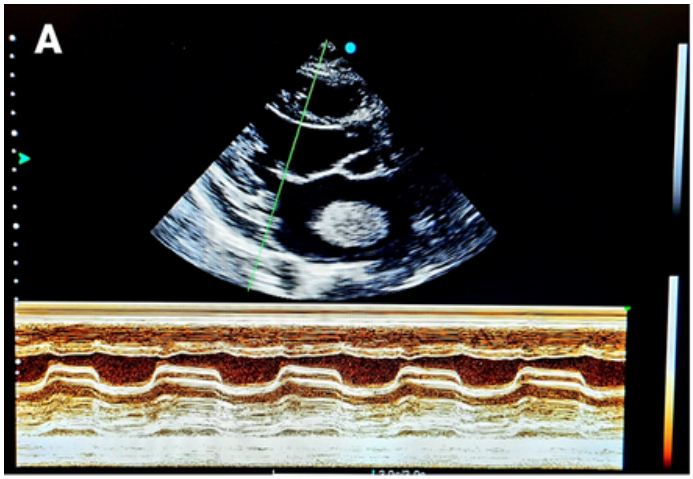

Fig.1 (A) Transthoracic echocardiogram in parasternal long axis view in diastole demonstrating the anterior mitral valve leaflet shows restricted posterior mitral valve leaflet, fusion of chordal and calcification.

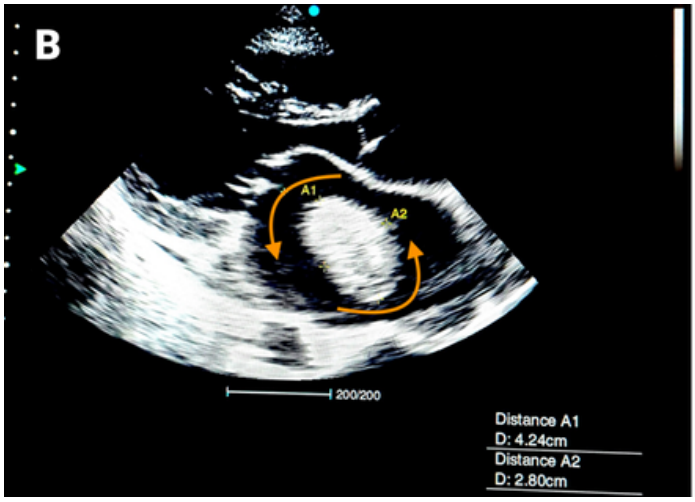

Fig. 2 (B) Transthoracic echocardiogram in parasternal long axis view in diastole showed a hockey-stick shape and thickened anterior mitral valve leaflet, a large free-floating ball-valve thrombus (to 4.24 cm in diameter) with anti-clockwise spinning movement in the dilated atrium.

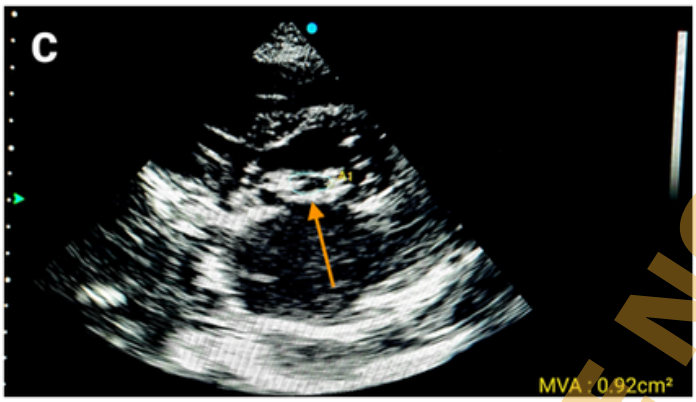

Fig. 3 (C) Transthoracic echocardiogram in short axis view showed a several mitral stenosis with a valve area of 0.9 cm2.

Discussion

The mechanism of left atrial ball thrombus is much more complex than venous and arterial thrombosis. Left atrial ball thrombus is a complication secondary to rheumatic mitral valve disease (26–33% of cases) (4,5), and atrial fibrillation (10–30%) (6), especially in the setting of an enlarged left atrium. Our case report underlines the special need for medical control and cardiac exploration in patients with mitral valve stenosis and atrial fibrillation.

It is speculated that a fixed thrombus initially forms in the left atrial appendage or the left atrial wall (7). Afterwards, it grows into a round

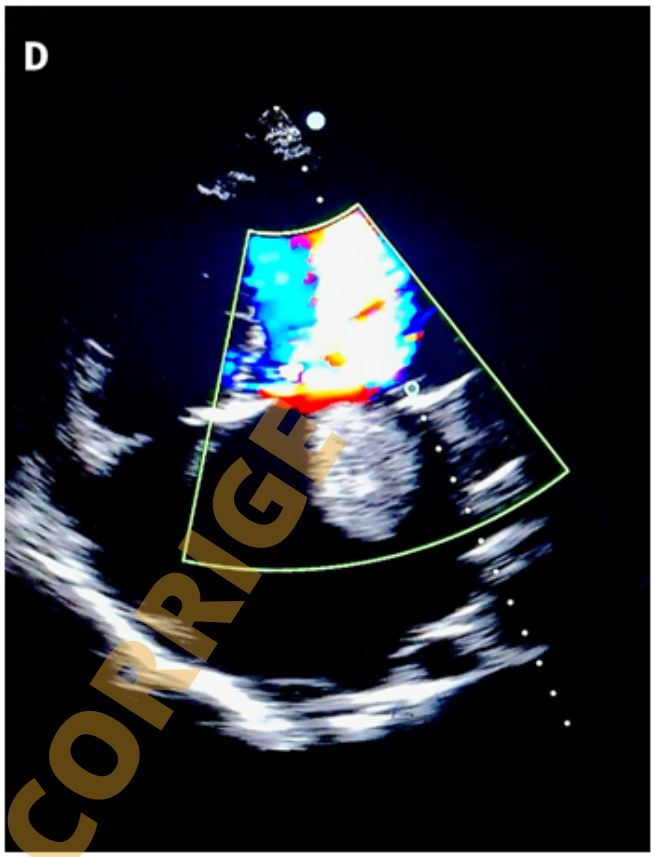

Fig. 4 (D) Transthoracic echocardiogram in apical four chamber view objectified, in the dilated atrium, the ball thrombus partially obstructed the mitral valve intermittently.

shape, followed by disconnection of the pedicle between the thrombus and the atrial wall (8). Wall-adherent thrombi can detach and float freely (9). The detached thrombus may be remodeled into the spherical shape by the sculpting effect of multiple collisions with the atrial wall and result ball thrombi (10).

Abe and col advocated the classification of left atrial thrombi into three types; movable ball type, fixed ball type and mountain type. They demonstrated that the rate of embolism in the movable type group was significantly higher than that in the other groups (11). In our case, it was a movable ball type and the embolic rate was very high (12), but, among these, spinning ball thrombi may have an even worse prognosis (7).

The presence of a left atrial ball thrombus is linked to higher embolic rates (13).

Oral anticoagulation therapy is used as standby treatment, and reduced stroke incidence to 37% to 86% (14). Despite well-managed anticoagulation, re-embolization has been reported (15). Furthermore, thrombolytic therapy for left atrial thrombus is ineffective and unsafe due to possible risks for embolus (16). In most patients, emergency surgery is usually indicated. This includes surgical removal of the floating thrombus, often combined with mechanical or bioprosthetic mitral valve replacement (17).

Conclusion:

Although rare, left atrial ball thrombus is a terrible complication of rheumatic mitral stenosis in connection with high frequency of embolic events. Always look for cardiac etiology, above all embolic ones, and perform cardiac explorations when patients present with strokes without much risk factor of atheromatous disease.

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