

Thrombus on the Chiari Network

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ABSTRACT

The presence of a mass in the right atrium requires a broad differential diagnosis including tumors, vegetations, thrombus, Eustachian valve, or Chiari's network. Traditionally, these etiological possibilities have been considered exclusive. This report describes the case of a male patient with catarrhal symptoms, generalized tenderness, and low-grade fever, diagnosed with atrial fibrillation and -through echocardiography- a mobile, elongated mass in the right atrium. Different etiological entities were proposed, and finally heparin treatment was started, which resolved the mass with persistence of a filamentous structure consistent with Chiari's network.

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Key words > Thrombus - Chiari's network- Mass - Atrium - Echocardiography

INTRODUCTION

The presence of a mass in the right atrium requires a broad differential diagnosis including tumors, vegetation, atrial thrombus, Eustachian valve, or Chiari's network. Traditionally, these etiological possibilities have been considered exclusive, but the case reported here proves this is not always the case.

CLINICAL REPORT

We report the case of a 61-year-old male patient with a history of hypercholesterolemia, who presented with a 12 day-history of catarrh, asthenia, lassitude, and evening low-grade fever, for which he had received flu treatment with phenylephrine and moxifloxacin, without significant improvement. Given the progressive increase of dyspnea on small efforts, recurrence of fever and palpitations, the patient presented at his health-care center where following an ECG he was transferred to the Emergency Unit.

The patient was afebrile during physical examination at the Emergency Unit. Auscultation revealed arrhythmic heart sounds at 130 bpm, no murmurs, and expiratory wheezing. The rest of the physical examination was uneventful.

ECG exhibited atrial fibrillation with mean ventricular response at 130 bpm. Lab testing showed discrete leukocytosis (leukocytes $13700 \times 10^9/L$, 70.3% neutrophils); the rest of the blood count, biochemistry (including thyroid panel), coagulation, and chest x-ray were normal.

As part of the study of a newly diagnosed atrial fi-

brillation, and given his asthenia, low-grade fever and generalized tenderness, a transthoracic echocardiography was performed revealing a non-calcified, mobile, elongated mass of 28 mm major axis and 20 mm minor axis, at the level of the right atrium, near the opening of the inferior vena cava. It looked like a prominent Eustachian valve or a Chiari network, although other etiologies could not be ruled out (Figure 1a & b). The rest of the structures, flows and pulmonary artery systolic blood pressure were normal. A transesophageal echocardiography was then performed, which again showed a mobile lobulated mass inside the right atrium, located on the Chiari network (close to the opening of the inferior vena cava) (Figure 1c & d).

Based on the echocardiographic images, vegetation, a tumor or a thrombus were considered diagnostic possibilities.

Regarding vegetation, the patient remained afebrile during hospital stay, despite referring generalized tenderness and persistent low-grade fever. In addition, his good health condition and the absence of typical manifestations of bacteremia were consistent with respiratory tract infection rather than bacteremia secondary to cardiac vegetation.

A tumor was a possibility to be considered, but given its prognosis and the need for cardiac surgery, it was first necessary to rule out a thrombus or vegetation.

The patient had asthenia without anorexia or weight loss, which could be attributed to atrial fibrillation with rapid ventricular response and to the infectious condition.

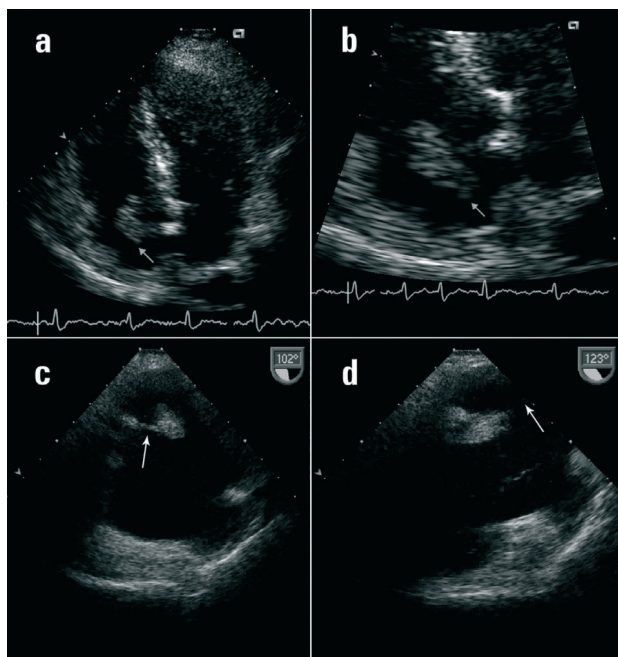


Fig. 1. Transthoracic echocardiography. **a.** Apical plane showing an ovoid mass inside the right atrium. **b.** Apical plane with enhanced image of the right atrium, showing how the intracavitary mass is connected to the atrial septum. **c & d.** Transesophageal echocardiography showing the lobulated mass inside the right atrium, formed on Chiari's network (arrows).

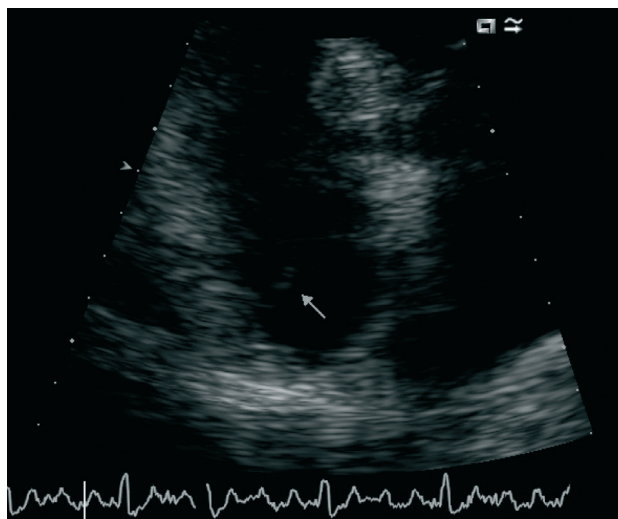


Fig. 2. Transthoracic echocardiography. Enhanced image of the right atrium in apical plane, showing a filamentous structure consistent with Chiari's network.

As for other possible etiologies, the presence of dyspnea could indicate pulmonary thromboembolism. Even though the onset of symptoms was quite insidious, echocardiographic findings did not show high pulmonary pressure. Moreover, during patient evolution, the progressive heart-rate reduction produced the regression of dyspnea. Therefore, we believe that dyspnea was due to atrial fibrillation with rapid ventricular

response rather than pulmonary thromboembolism.

Finally, given the symptoms and the electrocardiographic and echocardiographic findings, oral treatment with amoxicillin-clavulanic acid was initiated for the respiratory tract infection, and low molecular weight heparin was used as antithrombotic treatment, because the image in the right atrium and the atrial fibrillation indicated an intracavitary thrombus.

A week later, a control echocardiography showed that the right atrial mass observed in the previous echocardiography was no longer present; instead, a filamentous structure consistent with Chiari's network was found (Figure 2). Thus, given the good outcome with the anticoagulant therapy, the presence of a tumor was ruled out.

The atrial fibrillation was first treated with heart rate control. The patient made good progress and was discharged from hospital with atenolol, acenocoumarol, and simvastatin treatment. An electrical cardioversion procedure scheduled for three days later was not effective due to early recurrence. Flecainide therapy was added, and a subsequent electrical cardioversion was performed successfully. Since then, the patient has been asymptomatic, without significant findings in the control echocardiography performed at one year.

DISCUSSION

In 1897, the anatomist Hans Chiari described a structure in the right atrium connected to the Eustachian valve, identified as the embryological vestige of the right valve of the sinus venosus. (1) It is a fenestrated, fine structure found in 2-3% of the population, generally with no clinical significance.

The finding of a mass in the right atrium demands a broad differential diagnosis including tumors, vegetation, atrial thrombus or Chiari's network, (2) as well as differential diagnosis with the Eustachian valve. Traditionally, these etiological possibilities have been considered exclusive, but the case reported here proves this is not always the case.

This clinical report presents a thrombus formed on Chiari's network. Both entities coexist, which is not commonly found in clinical practice or in the literature, with only a few published cases. (3-5) Likewise, this is the first case described in the context of new onset atrial fibrillation.

RESUMEN

Trombo sobre la red de Chiari

El descubrimiento de una masa en la aurícula derecha obliga a realizar un amplio diagnóstico diferencial que incluye tumores, vegetaciones, trombo, válvula de Eustaquio o red de Chiari. Tradicionalmente, estas posibilidades etiológicas se han considerado excluyentes. En esta presentación se describe el caso de un varón con cuadro catarral, dolorimiento generalizado y febrícula, con diagnóstico de fibrilación auricular y, mediante ecocardiograma, de una masa alargada muy móvil en la aurícula derecha. Se plantearon diferentes entidades etiológicas y finalmente se inició tratamiento con

heparina, con lo que se produjo la resolución de dicha masa, con persistencia de una estructura filamentosa compatible con la red de Chiari.

Palabras clave > Trombo - Red de Chiari - Masa - Aurícula - Ecocardiografía

Conflicts of interest:

None declared.

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