Clinical case

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Chiari network – case report and brief literature review

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Abstract

Chiari networks are present in the right atrium in a minority of the population and are usually of no clinical significance. On the other hand it may associate some pathological changes, as *patent foramen ovale*, intraatrial thrombus or atrial arrhythmias. We present the case of an asymptomatic young woman diagnosed with Chiari network during a routine echocardiography.

Keywords: Chiari network, echocardiography, right atrium

Rezumat

Reţelele Chiari sunt prezente la nivelul atriului drept la număr mic de subiecţi din populaţia generală şi de cele mai multe ori nu au semnificaţie clinică. Cu toate acestea, au fost asociate cu prezenţa unor modificări patologice cum sunt *patent foramen ovale,* tromboza intraatrială, sau aritmiile atriale. Prezentăm cazul unei paciente tinere asimptomatice diagnosticată cu reţea Chiari în timpul unei ecocardiografii de rutină.

Cuvinte cheie: reţeaua Chiari, ecocardiografie, atriul drept

As echocardiography is being used nowadays as a current examination in most hospitals, the applications of this imaging technique developing continuous, and so is the potential for identifying normal anatomic variants of the heart.

Chiari network is one of them. It can present as a highly mobile, highly reflective echogenic image, in several locations in the right atrium [1].

This congenital remnant, which is found in 2- 3% of normal hearts in overall literature, has no known purpose and is not pathological, but could be confused with valve disruption, vegetation or other mass lesion, particularly when associated with a suggestive clinical situation [1,2].

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It is characterized by whip-like motion within the right atrium and attachment to the wall of the right atrium in close proximity to the entrance of the inferior vena cava. It was detected in approximately 1.5% of transthoracic ultrasonographies [3]. In patients undergoing transesophageal echocardiography, the prevalence of Chiari's network was 2%, as in autopsies.

By maintaining an embryonic right atrial flow pattern into adult life and directing the blood from the inferior vena cava toward the interatrial septum, Chiari's network may favor persistence of a *patent foramen ovale* and formation of an atrial septal aneurysm and facilitate paradoxic embolism [2].

Our case (female, aged 44) presented with no cardiovascular complaints, with a personal history of osteoarthritis. She had normal blood pressure, quasi-normal ECG at rest (with negative P waves in inferior leads), and normal cardiovascular physical exam.

At a routine echocardiography we detect a very mobile structure in the right atrium, with the characteristic whip-like motion, as shown in figure 1 and figure 2.

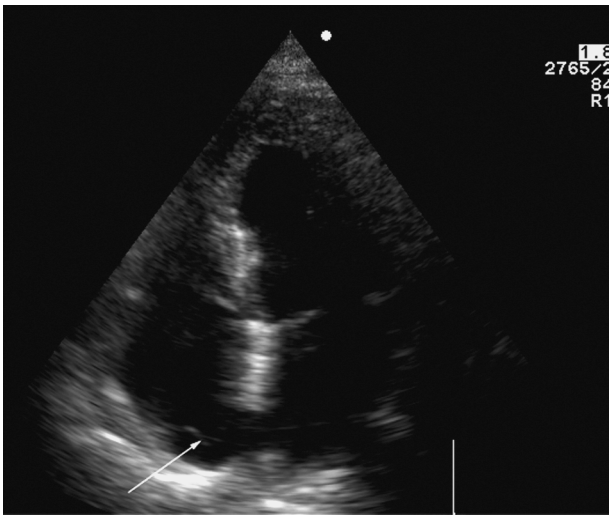


Fig 1. Apical four chambers view with the appearance of the Chiari network (arrow) in the right atrium.

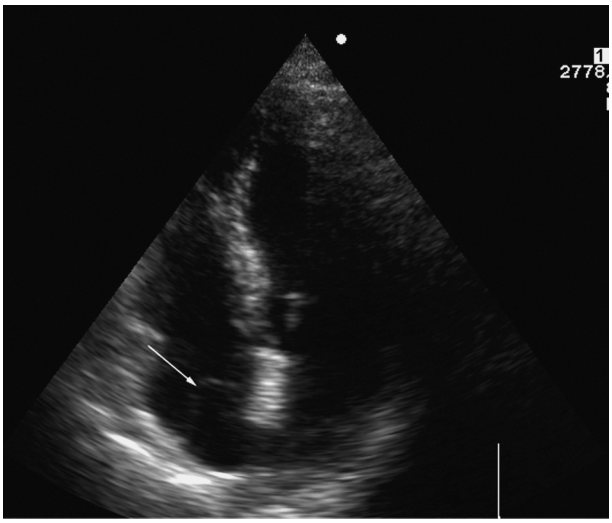


Fig 2. Apical four chambers view with the appearance of the Chiari network (arrow) in the right atrium, in other position (whipe-motion).

Discussions

The Chiari network was first described in 1897 in an autopsy series by Dr Chiari. The Chiari network appears like a web-like structure with a variable number of thread-like components [4]. The diagnosis is much easier with the modern devices, and the network itself has no clinical significance, but it still be confused with some pathological masses in right atrium, like thrombus, vegetation, and myxoma [4,5].

There are still some clinical aspects to be considered:

- Associations have been made with the presence of a patent foramen ovale (in about 80% of patients, in some studies [2]) with or without shunting, intraatrial thrombus and thromboembolic events, atrial aneurysm [2], cardiac arrhythmias, and most recently with infectious endocarditis [5,6].
- Cardiac arrhythmias in association with Chiari networks also have been reported [1]. It seems that supraventricular arrhythmias are conected with prolonged atrial conduction [7].
- There are also reports of Chiari networks acting as a physical barrier that interferes with the introduction of right-sided catheters and pacemakers [8].

Chiari network is often diagnosed incidentally with echocardiography as an asymptomatic right atrial mass. Echocardiography, transthoracical and transesophageal, in some cases, are both a reliable and noninvasive method of diagnosing Chiari networks.

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