

Letters to the Editor

Chiari Network and Paradoxical Embolism



Red de Chiari y embolia paradójica

To the Editor,

We read the article published by Laguna et al¹ with interest. However, in the wake of that reading, we would like to make a few comments that we believe to be important.

The sinus venosus forms part of the right atrium during embryonic development. Over the course of this period, the left cusp of the sinus venosus valve is incorporated into the septum secundum, whereas the right cusp gives rise to the crista terminalis (cephalic portion), to the Eustachian valve adjacent to the inferior vena cava, and to the Thebesian valve at the coronary sinus orifice (caudal portion). The persistence, to a greater or lesser extent, of this right cusp of the sinus venosus valve causes a wide array of malformations that ranges from prominent Eustachian valve to Chiari network and *cor triatriatum dexter*.²

The Chiari network, a fine, highly mobile structure that is usually fenestrated, is found in 2% to 3% of the population.³ It maintains an embryonic flow pattern into adulthood and channels inferior vena cava flow preferably toward the atrial septum, a circumstance that favors the persistence of patent foramen ovale and the formation of atrial septal aneurysms. For its part, the morphology of patent foramen ovale is variable and certain anatomical features—such as defects > 5 mm, persistent right-to-left shunt at rest, atrial septal aneurysm, or prominent Eustachian valve—have been associated with a higher risk of paradoxical embolism.⁴

Despite the fact that systematic reviews have established a strong link between patent foramen ovale and a higher risk of ischemic stroke,⁵ this association should especially be considered in young patients in whom there is no other cardiac cause to explain it.^{5,6} Although the possibility that the cerebral embolisms developed in the patient described by Laguna et al¹ fit within this context cannot be ruled out, it must be taken into account that the age of the patient, the presence of severe mitral regurgitation, increased left atrial size (findings observed in the study patient) and the frequent coexistence of atrial fibrillation (the authors do not mention the atrial rhythm or whether the patient had been receiving anticoagulation therapy) are the most common causes of cardioembolic events. To this can be added the absence of peripheral venous disease, hereditary coagulation disorders, and atrial septal aneurysm, 3 factors that potentiate the risk of paradoxical embolism. Likewise, patients with recent paradoxical embolism usually have simultaneous deep vein thrombosis or pulmonary embolism.⁷

Although some authors have reported that the Chiari network can protect against pulmonary embolism, acting as a filter at the

cavoatrial junction,⁸ we consider, as do Laguna et al, that it should be resected and the patent foramen ovale closed if the patient undergoes surgery for some other condition. This is due to the fact that the Chiari network could in itself be a primary source of thrombus formation,⁹ a circumstance that favors, although perhaps only occasionally, catheter entrapment and the development of supraventricular arrhythmias or bacterial endocarditis.¹⁰

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