

## A thrombus trapped in a patent foramen ovale: a migrant out of the ordinary

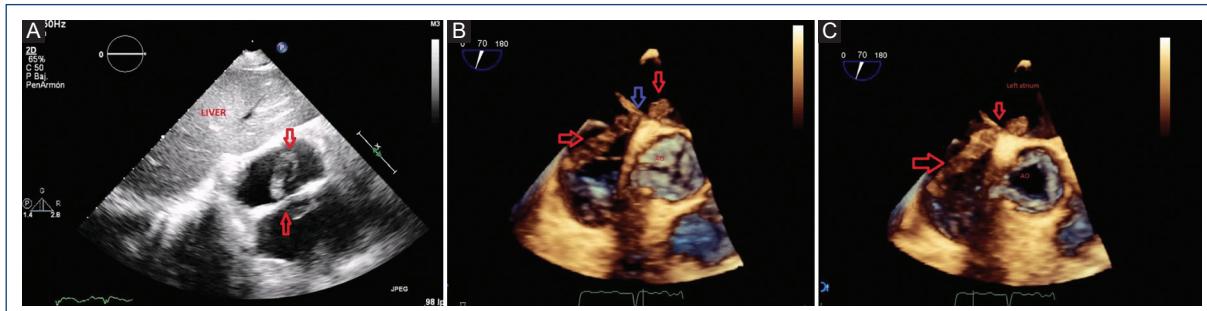
### *Un trombo atrapado en el foramen oval patente: un migrante fuera de lo ordinario*

Natalia R. Nombera<sup>1</sup>\*, Mauricio Guerra<sup>2</sup>, Ma. de los Ángeles G. Alvarado<sup>1</sup>, and Mary A. Bernal<sup>1</sup>

<sup>1</sup>Faculty of Medicine, Universidad Peruana Cayetano Heredia; <sup>2</sup>Department of Cardiology, Hospital Nacional Arzobispo Loayza. Lima, Peru

Floating right heart thrombus is rare, occurring in 3.8% of patients with pulmonary embolism (PE)<sup>1</sup>. A right to left shunt can let the thrombus pass to systemic circulation, causing a paradoxical embolism. Patent foramen ovale (PFO) is the most associated congenital heart defect. If the thrombus is larger than the foramen, an even rarer condition can arise, an impending paradoxical embolism (IPE)<sup>2</sup>. With a high mortality rate, the management requires emergency intervention to prevent systemic embolization<sup>3</sup>. Here, we describe the case of a patient with an IPE in which anticoagulation solely was effective.

An 80-years-old male patient presented to emergency with tachycardia. Seven days before, he suffered pleuritic chest pain and hemoptysis; 2 days before admission, sudden dyspnea at rest. The chest X-ray showed bilateral radiopacity and effacement of both costophrenic angles, atrial fibrillation was featured in EKG and an emergent CT pulmonary angiography revealed PE. The transthoracic echocardiography (TTE) at subcostal view and transesophageal echocardiography (TEE) showed a serpentine image that appeared to be a thrombus through PFO (Fig. 1A-C).



**Figure 1.** **A:** transthoracic echocardiography, subcostal view. The red arrows show a serpentine thrombus through the patent foramen ovale. In the right atrium, it is proximal to the tricuspid valve. **B:** transesophageal echocardiography. The red arrows show a serpentine thrombus through the patent foramen ovale. The blue arrow shows the patent foramen ovale. In the middle of the image, the aortic valve is seen closed. **C:** transesophageal echocardiography. The red arrows show a serpentine thrombus through the patent foramen ovale. In the middle of the image, the aortic valve is seen opened. AO: aorta.

\*Correspondence:

Natalia R. Nombera

E-mail: natalia.nombera@upch.pe

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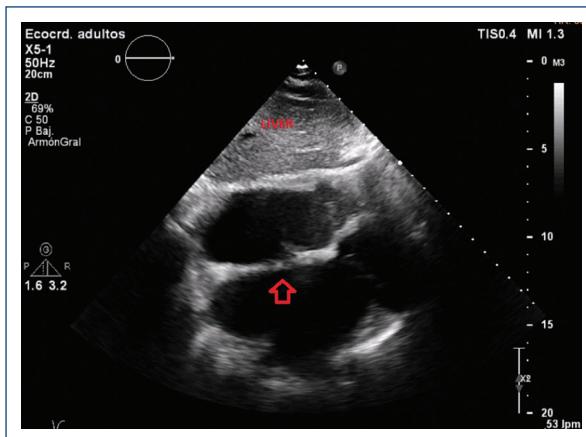
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**Figure 2.** Transthoracic echocardiography, subcostal view. Image taken after finishing the treatment of the patient. The serpentine thrombus had disappeared and the foramen ovale was occluded.

It was proximal to the tricuspid valve and attached to the septal wall of the left atrium.

The patient was diagnosed with IPE of which the etiology was the thrombus in transit, that developed into an acute decompensated heart failure. He was scheduled for surgery and remained on anticoagulation therapy. Clinical condition improved over the following days. In a pre-operative TTE (Fig. 2), complete resolution of the thrombi was evident.

This case contains many striking aspects. An IPE is an extremely rare finding in clinical practice, this being one of the few described in the literature. Due to the fact that it is a life-threatening condition because of the risk of systemic embolization, an early diagnosis must be made. Echocardiography, specially TEE, has an important role in making a correct and timely diagnosis. Finally,

optimal management of IPE remains unclear due to the lack of guidelines or randomized and controlled trials addressing the issue. The success in this case encourages us to consider anticoagulation therapy as an effective option, particularly if surgery is not available. However, the decision must be individualized.

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## Conflicts of interest

None.

## Ethical disclosures

**Protection of human and animal subjects.** The authors declare that no experiments were performed on humans or animals for this study.

**Confidentiality of data.** The authors declare that they have followed the protocols of their work center on the publication of patient data.

**Right to privacy and informed consent.** The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

## References

1. Torbicki A, Galié N, Covezzoli A, Rossi E, De Rosa M, Goldhaber SZ, et al. Right heart thrombi in pulmonary embolism: results from the international cooperative pulmonary embolism registry. *J Am Coll Cardiol.* 2003;41:2245-51.
2. Acikel S. Double-edged sword in the heart: trapped deep venous thrombus in a patent foramen ovale. *Blood Coagul Fibrinolysis.* 2012;23:673-5.
3. Barrios D, Chavant J, Jiménez D, Bertoletti L, Rosa-Salazar V, Muriel A, et al. Treatment of right heart thrombi associated with acute pulmonary embolism. *Am J Med.* 2017;130:588-595.