

A case of extensive biatrial clot straddling the patent foramen ovale

Cinzia Nugara¹, Annamaria Lo Voi¹, Davide Diana², Silvia Sarullo¹, Antonino Zarcone¹, Filippo M. Sarullo¹

¹Cardiovascular Rehabilitation Unit, Buccheri La Ferla Fatebenefratelli Hospital, Palermo; ²Division of Cardiology, Department of Health Promotion, Mother and Child Care, Internal Medicine and Medical Specialties (ProMISE) 'G. D'Alessandro', University Hospital Paolo Giaccone, Palermo, Italy

Introduction

Patent foramen ovale (PFO) is a common abnormality that occurs in about 25% of the adult population. In most cases is a benign finding, but sometimes the communication between the right and the left atria can be a conduit for thrombi.

We report a case of an 85-year-old female with biatrial thrombus straddling a patent foramen ovale, admitted for acute pulmonary embolism, deep venous thrombosis and paroxysmal atrial fibrillation successfully treated with unfractionated heparin followed by warfarin.

Case Report

The patient was admitted to our Emergency Department, for dyspnea and palpitations. On initial physical examination at

admission, she was dyspnoic with basal bilateral crackles and blood pressure of 100/60 mmHg; electrocardiogram showed atrial fibrillation. Blood gas analysis demonstrated hypocapnia and hypoxemia. Laboratory testing was significant for D-Dimer elevation at 3613 ng/ml.

Patient said she has been sedentary in the last weeks due to an episode of pneumonia.

Trans-thoracic echocardiogram (TTE) revealed the presence of poorly defined thrombi sited in both atria with a normal right and left ventricular systolic function (Figure 1). For a more detailed evaluation a trans-esophageal echocardiogram (TEE) was performed, revealing a giant floating thrombus extended to both atria connected through a tunnelized patent foramen ovale (PFO), sometimes deeping through the valvular plain into the ventricles (Figure 2). Peripheral venous Doppler revealed right popliteal vein thrombi above and below the knee. Computed tomography pulmonary angiography confirmed the presence of pulmonary emboli into the right pulmonary artery and its upper branches.

On acute phase, considering patient's features and hemodynamic stability, we started treatment with unfractionated heparin followed by warfarin. The patient recovered well. After three months therapy with Warfarin, she was in good clinical condition and gas exchange was normal. Computed tomography pulmonary angiography was normal, without evidence of emboli. Echocardiographic control did not reveal pulmonary hypertension and the presence of thrombi.

Correspondence: Filippo M. Sarullo, MD, Head of Cardiovascular Rehabilitation Unit, Buccheri La Ferla Fatebenefratelli Hospital, Via Messina Marine 197, 90123 Palermo, Italy.
Tel. +39.091.479263.
E-mail: fsarullo@neomedia.it

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Discussion

Impending paradoxical embolism in a biatrial thromboembolus straddling a PFO is a very rare but potentially fatal complication of the thromboembolic disease.

Diagnosis is challenging and there are little data available about the optimal management. Impending thrombi can be treated with anticoagulation, pharmacological thrombolysis and/or surgical thrombectomy and there is no medical consensus about the best option for treatment.

A review of 88 cases proposes a diagram consisting of the use of the three therapeutic options in the different clinical scenarios, suggesting anticoagulation treatment for patients hemodynamically stable with high surgical risk or associated comorbidities. Nevertheless, surgery appeared to be the best approach in patients who are not at a high surgical risk [1].

A clinical research conducted on 88 cases shows that medical treatment with heparin tends to be used as a second option in patients with more frequent comorbidities and strokes, but the mortality rate is similar to that in the surgical group. Surgery seems to be justified in the prevention of paradoxical embolism.

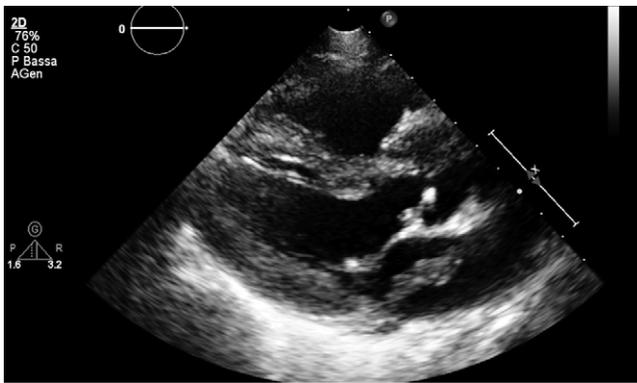


Figure 1. Parasternal long-axis TTE view showing the presence of a floating mass inside left atrium.

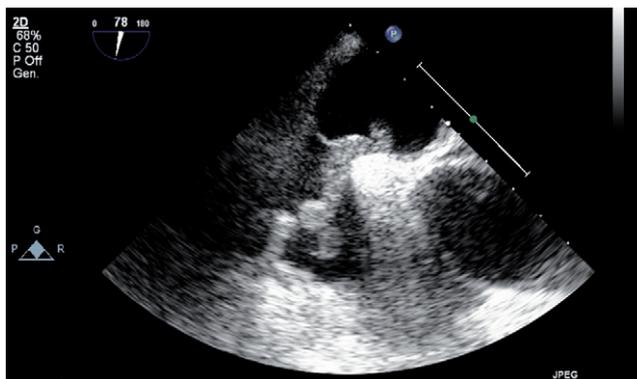


Figure 2. Two-dimensional TEE showing a giant floating thrombus extended to both atria connected through a tunnelized PFO.

Thrombolysis is more frequently chosen in the higher risk group and is associated with the greatest mortality [2].

Another review, who compare mortality and systemic embolism between treatments, showed that surgical thromboembolectomy had a non-significant trend toward improved survival, significantly reduced systemic embolism, and composite of mortality and systemic embolism, compared with anticoagulation

alone. Thrombolysis, on the other hand, had the opposite effect, although not significantly [3].

Similar findings are reported in a review by Seo *et al.* that included 194 patients with thrombus trapped in PFO. In this review, surgical thrombectomy was associated with statistically significant decrease in mortality and systemic embolization compared with anticoagulation and thrombolysis [4].

A recent article reports, according to a literature review, no significant advantages, in terms of survival, among the 3 therapeutic options: 38%, 38%, and 30% rate of mortality for embolectomy, thrombolysis, and anticoagulation, respectively [5].

Current guidelines on the management of pulmonary embolism recommend anticoagulation therapy when systemic fibrinolysis or surgery are contraindicated, not available or have failed to improve hemodynamic stability [6].

The treatment strategy should take into consideration individual parameters such as patient's age, hemodynamic stability and comorbidities; our patient was frailty and old, she had a high surgical risk and she was hemodynamically stable; for this reason, without clear literature evidence we decided not to proceed with surgical thrombectomy but with anticoagulation alone.

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