

Impending Paradoxical Embolism across a Patent Foramen Ovale: Case Report

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ABSTRACT

We describe a case of impending paradoxical embolism in a 43-year-old male patient with pulmonary embolism. Transesophageal echocardiography revealed a thromboembolus straddling a patent foramen ovale. The patient underwent emergency removal of the intracardiac clot with closure of the patent foramen ovale. A postoperative work-up for a hypercoagulable state revealed a protein-S deficiency and bilateral lower extremity deep vein thromboses. A Greenfield inferior vena cava filter was inserted, anticoagulation was performed, and warfarin treatment was continued after the patient was discharged home.

INTRODUCTION

A paradoxical embolism may occur across a patent foramen ovale (PFO) with the passage of embolic material from the venous to the arterial circulation [Hargreaves 1994]. We describe a case of impending paradoxical embolism in a patient with pulmonary embolism. Transesophageal echocardiography revealed a thromboembolus straddling a PFO. The patient underwent emergency removal of the intracardiac clot with closure of the PFO.

CASE REPORT

A 43-year-old man presented to the emergency room after a transient syncopal episode. He had a history of hypertension, right leg fracture, and a left anterior cruciate ligament repair several years ago. Electrocardiogram revealed nonspecific T-wave inversions and a troponin level of 0.21. Cardiac catheterization results were normal. Transesophageal echocardiogram (Figure 1) showed a long thrombus connected by a

stalk and projecting through a PFO. The patient was taken to the operating room where a median sternotomy was performed. On opening the sternum we noted an acute elevation

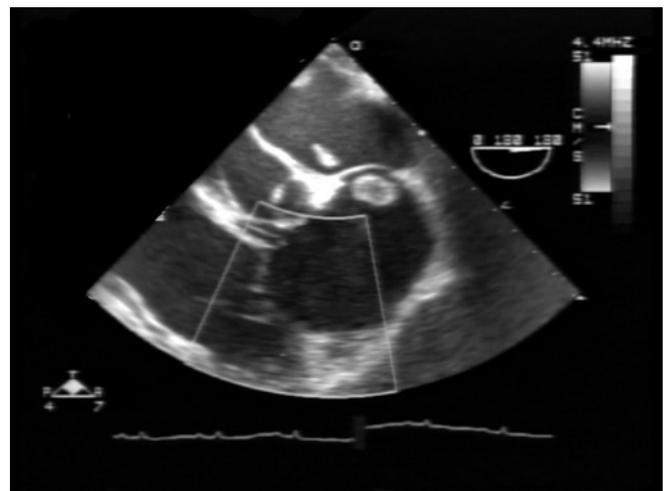


Figure 1. Transesophageal echocardiogram images showing a long thrombus connected by a stalk and projecting through a patent foramen ovale.

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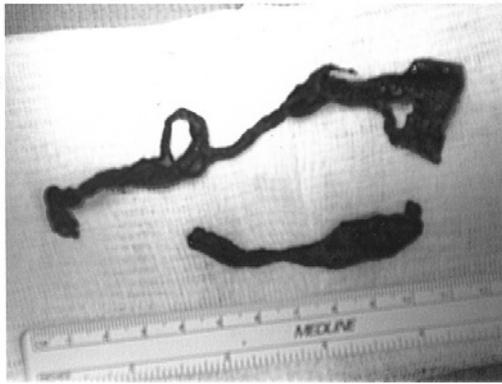


Figure 2. Dumbbell-shaped thrombus extracted from the left pulmonary artery (bottom) and a second thrombus retrieved with a pulmonary embolectomy (top).

of the central venous pressure along with severe right ventricular dilatation, and because of hemodynamic instability cardiopulmonary bypass was instituted urgently. The right atrium was opened and no thrombus was identified. We opened the pulmonary artery and extracted a dumbbell-shaped thrombus from the left pulmonary artery. Using pulmonary embolectomy, we retrieved a second thrombus (Figure 2). The PFO was closed with 4-0 polypropylene in a standard fashion. A postoperative work-up for a hypercoagulable state revealed a protein-S deficiency and bilateral lower extremity deep vein thromboses. A Greenfield inferior vena

cava (IVC) filter was inserted, and the patient underwent anticoagulation and was discharged home on warfarin therapy.

CONCLUSION

The classical simultaneous pulmonary and paradoxical embolism is a rare finding. The clinical features are complex, and often they are absent. Therapeutic options are cardiac surgery, thrombolysis, or anticoagulation. With medical treatment the early mortality rate is high (21%), and recurrent embolisms have been reported [Aboyans 1998]. The addition of a hypercoagulable state further increases the risks of simultaneous pulmonary and paradoxical embolism.

In this clinical setting we recommend an aggressive approach involving expeditious surgical removal of the embolus and closure of the PFO. This procedure should be followed by a search for the source and etiology of the thrombus, followed by anticoagulation and insertion of an inferior vena cava filter when indicated.

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