

IMAGES IN INTERVENTION

Catheter Occlusion of a Pulmonary Arteriovenous Fistula in a Patient 65 Years Old With Paradoxical Ischemic Stroke 2-Year Follow-Up



Basil (Vasilios) D. Thanopoulos, MD, PhD, George Papaioannou, MD

A 65-year-old woman with a history of multiple (1 to 2/year since 45 years of age) transient ischemic attacks was referred to our department with the multislice computed tomography (MSCT) diagnosis of pulmonary arteriovenous fistula (PAVF) for catheter closure (**Figure 1A**). Two weeks prior to admission, the patient had a cryptogenic stroke with cardiac magnetic resonance confirmation that was characterized by dysarthria and unilateral body weakness despite treatment with aspirin and Coumadin (Bristol-Myers Squibb, New York, New York). Blood tests and transesophageal echocardiography with color Doppler study were negative for thrombophilia and patent foramen ovale, respectively. Due to the patient's speech disturbance, it was not possible to perform a bubble test during Valsalva maneuver. Cardiac catheterization confirmed the MSCT findings demonstrating a PAVF between the right pulmonary artery and right upper pulmonary vein (**Figures 1B and 1C**, **Online Video 1**). The PAVF was successfully closed with a 6-mm Amplatzer vascular plug II (St. Jude Medical, St. Paul, Minnesota) (**Figure 1D**, **Online Video 2**). The patient went home a week after the procedure in stable condition on aspirin 5 mg/kg daily. One year

later, an MSCT demonstrated complete closure and no recanalization of the fistula (**Figure 1E**). Complete resolution of her neurological symptoms was observed at 1-year follow-up. The patient did not have any further episodes of transient ischemic attacks or stroke during a follow-up period of 2 years.

Paradoxical embolism in patients with isolated PAVF is rare with few reported cases in the literature (1-3). Late appearance of microbubbles in the left atrium during transesophageal echocardiography with Valsalva bubble test is highly suggestive of PAVF in patients with cryptogenic stroke (4). However, it should be noted that this test is difficult or not possible to perform in patients with dysarthria or disturbance of consciousness. Our case emphasizes the importance of MSCT in the initial evaluation and the post-closure follow-up of patients with PAVF-related cryptogenic stroke.

REPRINT REQUESTS AND CORRESPONDENCE: Dr. Basil D. Thanopoulos, Department of Interventional Pediatric Cardiology, Iatrikon Medical Center, Distomou 5-7, 15125, Athens, Greece. E-mail: vthanop@otenet.gr OR Thanopoulos.d@gmail.com.

From the Department of Interventional Pediatric Cardiology, Iatrikon Medical Center, Athens, Greece. The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

Manuscript received January 5, 2014; accepted January 16, 2014.

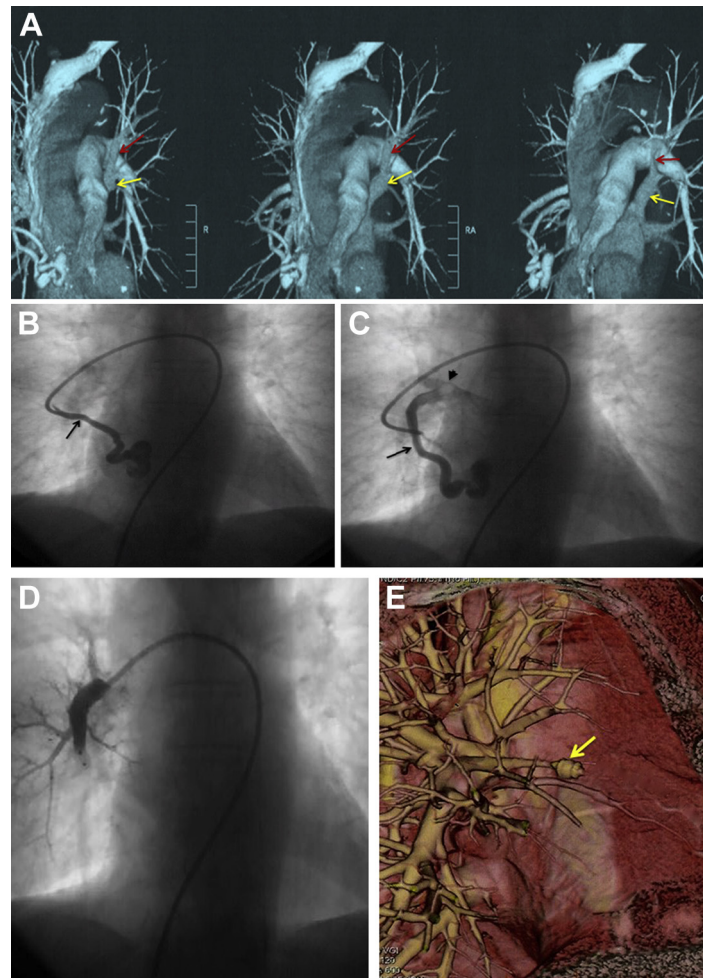


FIGURE 1 Diagnostic, Periprocedural, and Follow-Up Images

(A) Multislice computed tomography showing an anomalous communication between the medial branch of the right pulmonary artery (red arrows) and right upper pulmonary vein (yellow arrows). Early (B) and late (C) phase selective pulmonary angiography in the pulmonary arteriovenous fistula through a Berman 7-F angiographic catheter showing a moderately large fistula connecting the medial branch of the right pulmonary artery (arrow) and right upper pulmonary vein (arrowhead) (Online Video 1). (D) Successful closure of the pulmonary arteriovenous fistula using a 6-mm Amplatzer vascular plug II (Online Video 2). (E) Multislice computed tomography performed 1 year following catheter closure demonstrating complete closure of the fistula by the Amplatzer plug (yellow arrow) and no recanalization.

REFERENCES

- Kimura K, Minematsu K, Nakajima M. Isolated pulmonary arteriovenous fistula without Rendu-Osler-Weber disease as a cause of cryptogenic stroke. *J Neurol Neurosurg Psychiatry* 2004;75:311-3.
- Rao SC, Main ML. Transoesophageal echocardiographic diagnosis of pulmonary arteriovenous malformation in a patient with ischaemic stroke. *Eur J Echocardiogr* 2009;10:347-9.
- Román G, Fisher M, Perl DP, Poser CM. Neurological manifestations of hereditary hemorrhagic telangiectasia (Rendu-Osler-Weber disease): report of 2 cases and review of the literature. *Ann Neurol* 1978;4:130-44.
- Patti G, D'Antonio L, Sedati P, Mega S, Di Sciascio G. Percutaneous closure of a pulmonary arteriovenous malformation in young patient with cryptogenic stroke. *J Am Coll Cardiol Intv* 2013;6:e26-7.

KEY WORDS device closure, pulmonary arteriovenous fistula, transient ischemia

APPENDIX For accompanying videos, and their legends, please see the online version of this article.