Diagnosis of pulmonary arteriovenous malformation using a transesophageal echocardiography bubble study

Satya S. Vittala1, Bart M. Demaerschalk2, Eric A. Huettl3, Robert F. Burke1, and Hari P. Chaliki1*

1Division of Cardiovascular Diseases, Mayo Clinic, 13400 E Shea Blvd, Scottsdale, AZ 85259 USA; 2Department of Neurology, Mayo Clinic, Scottsdale, AZ, USA; and 3Department of Radiology, Mayo Clinic, Scottsdale, AZ, USA

* Corresponding author. Tel: +1 480 301 8000; fax: +1 480 301 8018, Email: chaliki.hari@mayo.edu

A 42-year-old woman underwent transthoracic echocardiography with agitated saline contrast injection after an ischaemic stroke; a right-to-left shunt was observed (Figure A). Transesophageal echocardiography with agitated saline contrast injection (‘bubble study’) was then performed; bubbles were apparent in the left atrium after four cardiac cycles (Figure B, arrows), and additional agitated saline injections confirmed an intrapulmonary shunt, with bubbles entering the left atrium exclusively through the right inferior pulmonary vein (Figure C, arrows). There were no bubbles in left superior pulmonary vein, inferior pulmonary vein (Figure D), or right superior pulmonary vein (not shown). Subsequent computerized tomography pulmonary angiography showed an arteriovenous malformation in the posterior basilar segment of the right lower lobe (Figure E, arrow). Pulmonary angiography confirmed the arteriovenous malformation (Figure F, arrow), supplied by the posterior basal segment artery, with a single, large, draining vein. Embolization was successful with three Nester platinum embolization coils (8, 6, and 4 mm; Cook Medical, Inc, Bloomington, Indiana; Figure G, arrow). Our case shows that pulmonary arteriovenous malformation can be localized using carefully performed transesophageal echocardiography with saline contrast (bubble study).

IPV, inferior pulmonary vein; LA, left atrium; L, left; LV, left ventricle; RA, right atrium; R, right; RV, right ventricle; SPV, superior pulmonary vein.

Conflict of interest: none declared

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