Saccular aneurysm within a persistent ductus arteriosus

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A 26-year-old man with a proven SMAD3 mutation underwent cardiovascular assessment, because his 52-year-old mother died of an aortic dissection and his 28-year-old brother has an aortic root aneurysm of 41 mm. CT angiography showed a dilated pulmonary trunk (50 mm) and a saccular aneurysm of a persistent ductus arteriosus (figure A; see also webvideo 1). During catheterisation the pressure in the aneurysm was 75% of systemic arterial pressure. To prevent further enlargement and possible rupture, the aneurysm (18 mm × 14 mm) was filled with an Amplatzer Vascular Plug II (AGA Medical, Plymouth, USA) (figure B and C; see also webvideo 2). A recently discovered syndromic form of aortic aneurysms and dissections with early-onset osteoarthritis, caused by pathogenic SMAD3 mutations, is characterised by aneurysms, dissections, and tortuosity throughout the arterial tree, predominantly in the aortic root.1 In our case, CT angiography was a useful screening method.

Reference

Figure: Saccular aneurysm within a persistent ductus arteriosus and placement of a vascular plug

(A) 3D reconstruction of CT angiography showing a dilated pulmonary trunk (50 mm) and a saccular aneurysm of a persistent ductus arteriosus (arrow).
(B) Angiography images showing different stages of catheterisation: (i) aneurysm of the persistent ductus arteriosus (14 mm × 18 mm); (ii) catheter positioned within the aneurysm; (iii) delivery of the vascular plug (size 16 mm × 12 mm); (iv) closure of the persistent ductus arteriosus with the vascular plug in place.
(C) 3D reconstruction of CT angiography showing the result after interventional closure of the aneurysm with a vascular plug (arrow).