Clinical picture

Interatrial septal thrombus-in-transit despite severe mitral regurgitation

A 47-year-old man presented with 1-day history of dyspnoea and near syncope. Electrocardiography showed sinus rhythm and chest X-ray showed mild cardiomegaly. Serum troponin I was mildly elevated at 0.371 ug/l. Arterial blood gases showed hypoxaemia with pO$_2$ of 55 mmHg. Transthoracic echocardiography revealed dilated left atrium (LA) and severe mitral regurgitation refluxing into pulmonary veins (Figure 1B). The mitral regurgitation was secondary to a possible perforation in the prolapsed anterior mitral valve leaflet (AMVL; Figure 1A). There was a mobile echodensity across the interatrial septum (IAS; Figure 1D). Computed tomography of the pulmonary arteries revealed the presence of filling defects in branches of both the right and left pulmonary arteries, consistent with pulmonary embolism. The patient was anti-coagulated. A pre-operative transoesophageal echocardiograms and intraoperative surgical views showing thrombus-in-transit across the interatrial septum and mitral valve perforation associated with severe mitral regurgitation.

Figure 1. Transthoracic and transoesophageal echocardiograms and intraoperative surgical views showing thrombus-in-transit across the interatrial septum and mitral valve perforation associated with severe mitral regurgitation.
echocardiography confirmed the presence of thrombus-in-transit across the patent foramen ovale, straddling between the left and right atria (Figure 1E). The AMVL at the A2/A3 scallops appeared prolapsed with severe mitral regurgitation originating from mitral valve perforation (Figure 1C). Despite increase in left atrial volume and pressure secondary to mitral regurgitation, thrombus was able to cross the IAS. Urgent surgery was performed. Intraoperatively, a longitudinally organized thrombus [black arrows, Figure 1G, viewed from right atrium (RA)] was removed from the patent foramen ovale en bloc and the foramen ovale closed. There was a perforation on the A3 segment measuring 15 mm in diameter (yellow arrows) with thickened and fibrosed edges (Figure 1F, viewed from the LA). A ruptured secondary chord was found attached to the edge of the perforation (curved arrow). The mitral valve was repaired, with patching of A3 perforation, creation of neochords to A2 and A3 scallops and mitral annuloplasty performed. Postoperative echocardiography confirmed successful surgical results. None of the blood and tissue cultures was positive. Histology of the interatrial serpentine mass confirmed thrombus. Patient was discharged well.

These images showed rare presence of thrombus-in-transit caught crossing the IAS. Despite the presence of severe mitral regurgitation resulting in increased LA volume and elevated LA pressure, clinicians should be aware that paradoxical catastrophic systemic embolism can still occur across a patent foramen ovale. In this case, mitral regurgitation together with pulmonary embolism may cause secondary pulmonary hypertension, producing right to left shunting. Urgent surgery is warranted before the subject experiences stroke.

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