

Embolic Stroke due to Pulmonary Vein Thrombosis: A Late Complication of Lung Transplantation

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ABSTRACT

Pulmonary vein thrombosis (PVT) is a rare condition seen almost exclusively in the first two weeks after lung transplantation or lobectomy. Subsequent embolic phenomena are uncommon. Herein, a 47-year-old male with a history of bilateral lung transplantation presented with transient episodes of acute dysphasia and right arm weakness. Brain MRI revealed cortical infarcts in the territory of the left middle cerebral artery. Transesophageal echocardiogram demonstrated a thrombus in the left lower pulmonary vein. This represents the latest manifestation of a PVT reported in the literature—6 years after redo transplantation and 13 years after the original surgery. Investigation for PVT should be considered in any patient with previous lung transplantation that presents with systemic emboli.

KEYWORDS: Emboli; Stroke; Cerebrovascular accident; Pulmonary vein thrombosis; Lung transplantation

CASE PRESENTATION

A 47-year-old male presented following three transient episodes of abnormal speech and right upper limb weakness over several hours, which had resolved at time of presentation. He had undergone lung transplantation for cystic fibrosis 13 years before, with a redo transplantation for bronchiolitis obliterans with concurrent patent foramen ovale closure seven years later. Additional history included previous perioperative right temporoparietal infarct, diabetes, hypertension and chronic kidney disease. Brain MRI performed on day two demonstrated several foci of acute cortical ischemia in the left posterofrontal lobe, consistent with left middle cerebral artery emboli. Aspirin, clopidogrel and rosuvastatin were commenced. Carotid and vertebral duplex studies were normal

and he remained in sinus rhythm on telemetry. On day three, the patient became acutely dysarthric. Transesophageal echocardiogram (TOE) revealed an abnormal echodensity in the left lower pulmonary vein with increased flow, consistent with subacute thrombus (Fig 1). Intravenous heparin and oral warfarin were commenced, with antiplatelet agents ceased. Brain CT on day five demonstrated a new subcortical frontoparietal infarct. Eight weeks later, he remained dysarthric with no other new deficits.

DISCUSSION

Pulmonary vein thrombosis (PVT) is a recognized early complication of lung transplantation, with thrombus arising at venous anastomoses in up to 15% of patients within 48 hrs of surgery [1, 2]. Infrequently, cases arise several weeks or as late as two years after transplantation [1, 3]. PVT is also associated with pulmonary lobectomy, radiofrequency cardiac ablation, thoracic malignancy and metastatic

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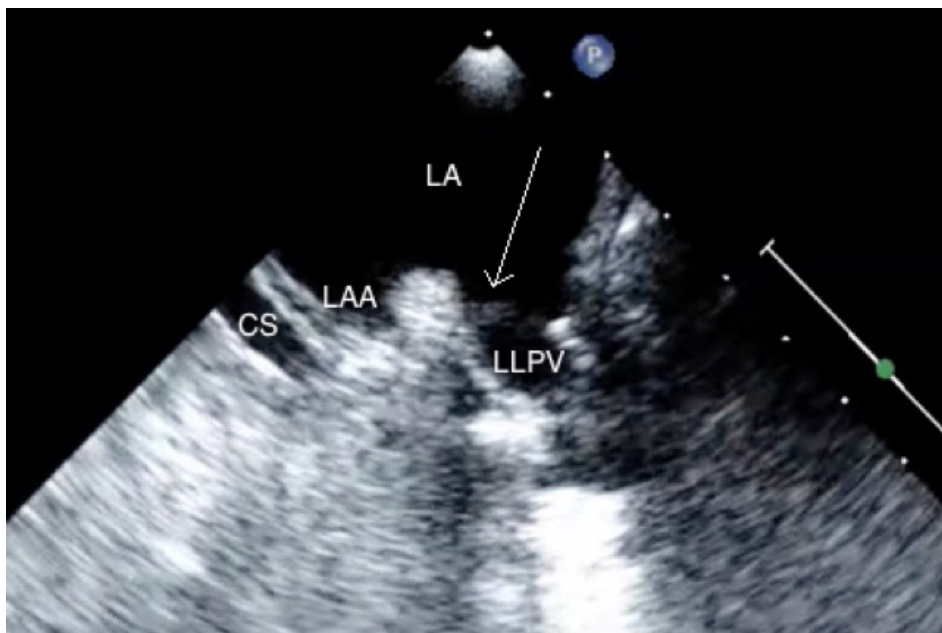


Figure 1: Transesophageal echocardiogram: mid-esophageal view demonstrating thrombus at the origin of the left lower pulmonary vein (white arrow). LLPV: left lower pulmonary vein, LA: left atrium, LAA: left atrial appendage, CS: coronary sinus

diseases [1]. Non-specific signs and symptoms are the usual manifestation with the diagnosis commonly made using TOE or CT pulmonary venogram [1].

A prospective study utilizing TOE in 87 lung transplant patients demonstrated a mean \pm SD pulmonary venous blood flow velocity of 123 ± 23 cm/s in those with PVT compared with 50 ± 10 cm/s in those without PVT [3]. TOE findings in our patient were consistent with PVT, with mean pulmonary venous flow velocity of 160 cm/s.

Treatment typically involves systemic anticoagulation [4]. Thrombolysis and surgical thrombectomy may be utilized in large obstructive thrombi [5, 6].

Current literature demonstrates that the most delayed presentation of PVT post-lung transplantation is 2.3 years [2]. Herein, we present a patient with PVT six years after redo transplant and 13 years after the initial transplantation. We postulate that his second transplant, with the creation of further surgical anastomoses, increased the risk of thrombus formation.

Investigation for PVT should be considered in any patients presenting with systemic embolic phenomena and a history of lung transplantation, regardless of the time elapsed since the procedure.

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