

Cardiac Imaging

Partial Anomalous Pulmonary Venous Connection

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A man aged 42 years, a smoker, hyperlipidaemic with a positive family history for coronary artery disease (father) and diabetes mellitus (mother) was investigated for chest pain. The clinical examination gave no clear pathological findings. The ECG was normal. Blood biochemistry confirmed the reported hyperlipidaemia. The transthoracic echocardiogram showed a small dilatation of the right cardiac cavities. There was no atrial or ventricular septal defect, nor any other anatomical myocardial anomaly. A stress test was negative for myocardial ischaemia.

On cardiac catheterisation a left-to-right shunt of 14% of the systemic circulation was calculated from oximetry. Coronary angiography showed coronary vessels without haemodynamically significant lesions.

A transoesophageal echocardiographic study failed to record the outflow of all pulmonary veins in the left atrium.

Magnetic resonance angiography (Siemens Magnetom Symphony, Siemens Medical Solutions, Erlangen, DE) depicted an ectopic vessel adjacent to the aortic arch, connecting the left superior pulmonary vein with the ipsilateral left brachiocephalic vein (Figure 1). This congenital type of shunt drains the blood from the left

superior pulmonary lobe to the superior *vena cava* and the right atrium (left-to-right shunt).¹

In this condition one or more of the pulmonary veins, but not all, are connected to the right atrium or to one or more of its venous tributaries. An atrial septal defect, especially of the sinus venous type, commonly accompanies this anomaly; the usual connection involves the veins of the right upper and middle lobes and the superior *vena cava*. Exclusive of atrial septal defects, major additional cardiac malformations occur in about 20% of patients: these include ventricular septal defect, tetralogy of Fallot, and a variety of complex anomalies. In the absence of associated anomalies the physiological disturbance is determined by the number of anomalous veins and their site of connection, the presence and size of an atrial septal defect, and the state of the pulmonary vascular bed. In the usual patient with isolated partial anomalous pulmonary venous connection the haemodynamic state and physical findings are similar to those in atrial septal defect.²⁻⁴

On cardiac catheterisation, partial anomalous pulmonary venous connection to the coronary sinus, azygos vein, or superior *vena cava* may be identified by careful and frequent oximetry sampling. Surgical repair offers definitive therapy at low risk

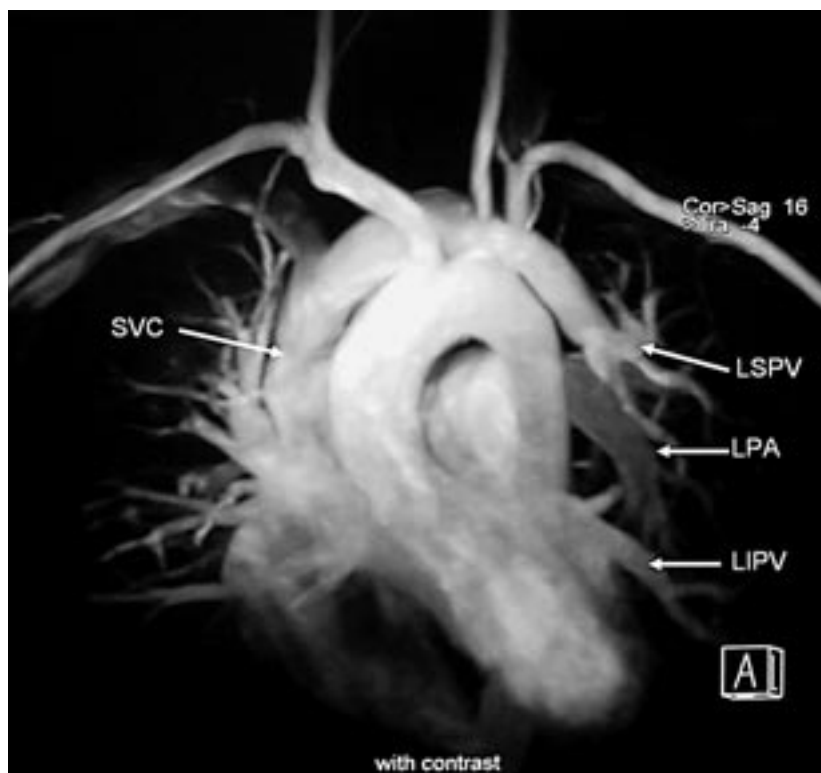


Figure 1. Magnetic resonance angiography showing partial anomalous pulmonary venous connection. LIPV – Left inferior pulmonary vein; LPA – left pulmonary artery; LSPV – left superior pulmonary vein; SVC – superior vena cava.

if pulmonary vascular obliterative disease has not yet developed.

It was recommended that our patient should be monitored on a regular basis.

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