Unilateral pulmonary edema caused by paravalvular leakage recognized by bedside transesophageal echocardiography

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Unfortunately, the patient developed a severe pulmonary infection five days later, which caused a systemic sepsis. He died 2 weeks after admission.

**DISCUSSION**

Unilateral pulmonary edema (UPE) is a distinctly unusual clinical entity that often presents interesting and confusing diagnostic challenge. In 1978, CALENOFF *et al.* proposed a distinction between ipsilateral and contralateral edema (2). Ipsilateral pulmonary edema occurs on the same side as focal insult to one lung. Causes may include bronchial obstruction, extrinsic pulmonary venous compression (eg, neoplasm), unilateral veno-occlusive disease, re-expansion edema (caused by rapid extraction of pleural air or fluid), pulmonary contusions, and several others. On the other hand, contralateral edema was described by the authors as edema that occurs in a normal lung only because of an abnormality of the opposite lung. This may occur for example in pulmonary embolism, after pneumonectomy or in congenital absence or hypoplasia of pulmonary artery.

UPE as an initial presenting manifestation for heart failure is uncommon. Although it occurs most commonly with cardiac decompensation who are in dependant position, several cases of UPE secondary to mitral regurgitation have been described, predominantly in the right upper lobe (3-7). Some authors speculated that the right upper lobe is a likely location for edema since its veins open more directly opposite the mitral valve and thus may be exposed to higher pressure from regurgitant jet (8). ROACH *et al.* (5) later reported that the jet of regurgitant flow in a patient with a flail posterior leaflet, the most common valve leaflet involved, is directed specifically towards the right pulmonary veins.

Cases of left-sided UPE as a consequence of mitral regurgitation are rare. RICE *et al.* reported the first case of left, predominantly upper lobe, UPE

![Fig. 2. — Transesophageal echocardiography documented a posterior mitral annulus leakage with a major regurgitant jet.](image1)

![Fig. 3. — Pulse-wave doppler analysis showing a major systolic reversal flow in the upper left pulmonary vein (A) and no systolic reversal flow in the upper right pulmonary vein (B).](image2)

![Fig. 4. — Chest radiograph performed 6 hours after surgery showing marked decrease of left lung edema.](image3)
secondary to paravalvular mitral regurgitation observed four months after prosthetic mitral valve replacement (St. Jude) (9). Therapeutic option and outcome were not described. More recently, Tomcsanyi et al. briefly reported a case of left-sided UPE in a 74-year-old man due to an eccentric mitral regurgitation complicating an inferior acute myocardial infarction (10). Early clinical and radiological improvement was observed under diuretics and nitrates infusion. In our case, we also found a very rapid disappearance of unilateral left pulmonary edema, observed only several hours after surgical closure of paravalvular leakage.

In conclusion, in case of UPE, the presence of mitral systolic murmur may suggest an eccentric mitral regurgitation. Transesophageal echocardiography may be useful to confirm the diagnosis and for clinical decision making.

References