Unilateral Pulmonary Edema Secondary to Mitral Valve Perforation

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A 52-year-old hypertensive man, with a 40–pack-a-year smoking history, presented to an outside hospital with dyspnea, fever, and cough. Chest x-ray demonstrated right-sided infiltrates. He was treated with antibiotics for presumed pneumonia. However, the patient presented the following morning with worsening dyspnea and hemoptysis. Bronchi-alveolar lavage and right lung biopsy under general anesthesia were nondiagnostic. The patient was transferred to our institution for further management.

At our hospital, chest auscultation revealed a systolic murmur consistent with mitral regurgitation (MR). Chest x-ray and computed tomography scan confirmed unilateral infiltrates (Figure 1). After transesophageal echocardiography (TEE) demonstrated moderate aortic stenosis and 4+ MR, raising the possibility of a mitral valve (MV) perforation, the patient was scheduled for urgent surgery.

Intraoperative cardiopulmonary bypass 2D TEE confirmed the presence of severe aortic stenosis. Interrogation of the MV showed thickened leaflets with good leaflet excursion and a possible perforation in the A2 scallop region. Color flow Doppler interrogation of the MV demonstrated the MR jet eccentrically directed toward the right upper pulmonary vein (Movie I in the online-only Data Supplement). Pulse wave Doppler revealed isolated systolic flow reversal in the right upper pulmonary vein (Figure 2). With the use of 3D TEE, a large perforation in the A2 scallop was visualized (Movie II in the online-only Data Supplement). Subsequently, the patient underwent an uneventful double-valve replacement. Postbypass TEE showed well-seated prosthetic valves with minimal regurgitation. Further course was unremarkable. The pathology report of the excised MV (Figure 3) revealed no evidence of infective endocarditis.

Unilateral pulmonary edema is commonly associated with eccentric MR, presenting as unilateral pulmonary infiltrates.1 Perforations of the MV causing eccentric MR are commonly a complication of bacterial endocarditis, or may be iatrogenic or congenital in nature.1 Differential diagnoses include bronchial obstruction, veno-occlusive disease, aspiration, pulmonary contusion, atelectasis, neoplasm, infection, and cardiac failure.2 Three-dimensional TEE has a higher diagnostic sensitivity than 2D TEE alone with the use of the left atrial en face view of the MV, which simulates the surgeon’s view through a left atriotomy.3

Disclosures

None.

References

Figure 1. A, Posteroanterior chest x-ray film clearly demonstrates right-sided pulmonary infiltrates and costophrenic angle bunting. B, Chest computed tomogram confirms unilateral pulmonary edema.

Figure 2. Pulse wave Doppler tracing demonstrating systolic reversal of blood flow in the right upper pulmonary vein.

Figure 3. Excised mitral valve demonstrating the perforation in the anterior leaflet (red arrow).
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