Acute Mitral Regurgitation: Another Great Masquerader?

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Dyspnea and a Murmur

Case

- 87 YOF with a history of HTN and osteoporosis was admitted to the hospital with acute-onset SOB both at rest and with exertion that began the day prior to admission and was associated with chest tightness, fatigue, and orthopnea.
- No fevers, cough, wheezing, hemoptysis, lower extremity edema, weight gain, or PND
- Possible sick contacts at her assisted living facility
- Recently traveled to Missouri
- No hx of known lung disease, pets, occupational exposures, TB exposure, or history of HTN
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- Exam was remarkable only for a 2/6 holosystolic murmur heard best at the apex with radiation to the axilla.

Significant Labs

- WBC 15.1
- BUN 25
- Cr 1.05
- Troponin <0.02
- BNP 430
- D-dimer 2.4
- ABG 7.38/39/279/23 on 100% FiO2

ECG

- Sinus tachycardia, no ischemic changes

Imaging

- CXR showed asymmetric opacities, right > left (Figure 1).
- Chest CT angiogram showed predominantly right upper lobe abnormalities with ground glass opacities, intralobular septal thickening, and consolidation (Figure 2).

Clinical Course

- Despite IV fluids for suspected decompensated HF and empiric broad-spectrum antibiotics for a possible atypical pneumonia, she did not improve.
- Given the new murmur on exam, a TTE was obtained and showed no wall motion abnormalities, hypodynamic LV with EF 80%, MV prolapse of the anterior leaflet without regurgitation, grade 2 diastolic dysfunction, normal RV size and function, and PASP of 40 mmHg.
- A follow-up TEE showed severe MR directed eccentrically (which explained the lack of TTE findings) and posteriorly with severe flail dysfunction, normal RV size and function, and PASP of 40 mmHg.
- As evidenced by Doppler images, the regurgitant jet generated more significant flow reversal in the right pulmonary vein than it did in the left, which could explain the unilateral findings on chest imaging (Figures 4 & 5).
- Due to advanced age and comorbidities, our patient chose medical management with afterload reduction rather than surgical valve repair.

Thoracentesis

- Pleural fluid analysis revealed:
  - Ascitic fluid: lactate dehydrogenase 1500, protein 1.5, glucose 50, and pH 7.32

Differential Diagnosis of Unilateral Pulmonary Infiltrates

- Cardiac
  - Acute MR
  - Acute MI without MR
  - L. sided HF (rare)

- Pulmonary
  - Pneumonia
  - Aspiration
  - Acute pneumonitis
  - Malignancy
  - Re-expansion pulmonary edema after thoracentesis
  - Bronchial obstruction

Causes of Acute MR

- ARB
- Papillary muscle rupture
- Infective endocarditis
- Blunt chest trauma
- Acute rheumatic fever
- Myxomatous degeneration as in Marfan’s
- HOCM
- Atrial myxoma
- Iatrogenic chordae tendinae rupture due to spontaneous rupture
- Sepsis
- Intramural amyloidosis
- Coronary vasospasm

Clinical Presentation of Acute MR

- Sudden, rapid onset of pulmonary edema
- Hypotension
- Cardiogenic shock
- Acute right-sided heart failure
- SOB, DOE, fatigue, weakness
- Exam with tachycardia, peripheral vasodilation with tachycardia, pallor, diaphoresis, elevated JVD
- If TR has developed, there may be a RV lift
- Soft, low-pitched systolic murmur along the left sternal border that may radiate to the back
- S3, loud P2 may be present

Transesophageal Echocardiography (TEE)

- Demonstrates valve disruption and provide semi-quantitative measure of regurgitation severity
- Limited sensitivity, misses up to 25% of MR seen on TTE
- Only finding may be hypodynamic left ventricular function

Conclusions

- Asymmetric or unilateral pulmonary edema is a rare cause of focal abnormalities on chest imaging and is frequently mistaken for more common conditions such as infection or malignancy.
- The asymmetry of pulmonary infiltrates in MR is due to the asymmetrical jet of mitral regurgitation causing a selective increase in R upper pulmonary vein pressure and consequently, a greater degree of R-sided pulmonary edema.
- There are clinically important limitations in relying on TTE to diagnose acute MR. In a patient with symptoms suggestive of acute heart failure and hypodynamic LV function on TTE, acute MR should be considered and a TEE should be obtained.
- This case highlights the importance of recognizing the variation in clinical manifestations of acute mitral regurgitation.
- Physicians should include acute valvular regurgitation in the differential diagnosis of any patient presenting with pulmonary manifestations, even with focal findings on chest imaging.

References