
Severe Mitral Regurgitation due to Infective Endocarditis: Do not Miss the “Hole”

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Anatomic changes in patients with mitral regurgitation vary according to the underlying etiology. Moreover, a single etiology (e.g., infection or ischemia) may cause valve regurgitation through different pathophysiologic mechanisms. Revealing “obscure” or “hidden” underlying pathologic and structural valvular abnormalities may therefore be essential for therapeutic purposes.

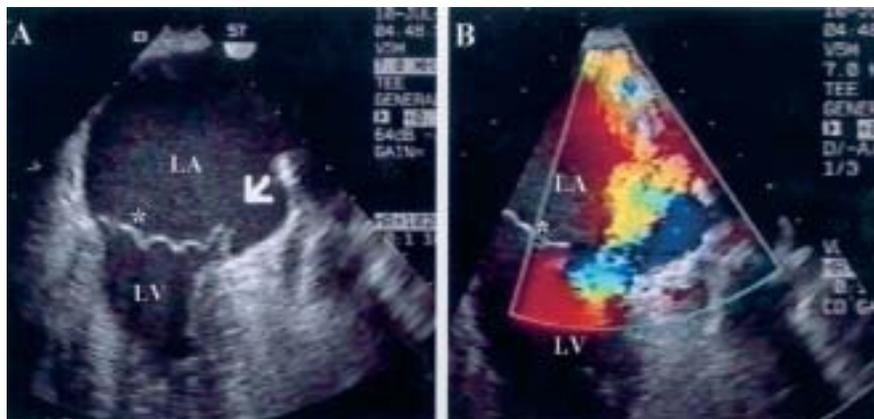
Patient Description

A 54 year old woman presented with fever, cough and shortness of breath. Her past medical history was unremarkable. She

engaged in regular physical activity and denied previous heart disease. On admission the patient was restless and dyspneic, with a body temperature of 38°C. Her jugular veins were distended and bilateral pulmonary soft rales were noted. A thrill was noted on chest palpation, and cardiac auscultation revealed an apical IV/VI holosystolic murmur radiating to the aortic area. The electrocardiogram showed sinus tachycardia with normal QRS axis. Chest X-ray showed a normal heart size and bilateral venous congestion with Kerley B lines. Transthoracic echocardiography demonstrated small vegetation on the atrial

surface of the posterior mitral leaflet, and severe mitral regurgitation was detected by color Doppler in the presence of normal leaflet coaptation.

Blood cultures were positive for *Streptococcus viridans* and the patient was treated with intravenous penicillin and gentamycin for 2 weeks. Treatment with furosemide and enalapril resulted in rapid symptomatic improvement. Body temperature returned to normal after 3 days of treatment. As shown in Figure A, transesophageal echocardiography performed 6 days after admission revealed mild left atrial enlargement, normal leaflet coaptation



[A] Arrow points to two vegetations surrounding a perforation in the posterior mitral leaflet. **[B]** Color imaging showing a systolic jet through the “hole” in the posterior mitral leaflet causing severe mitral regurgitation. * = point of leaflet coaptation, LA = left atrium, LV = left ventricle.

and two small vegetations on the atrial surface of the posterior mitral leaflet surrounding a “hole” of 3 mm in diameter. Color Doppler imaging showed a systolic jet through the “hole” causing severe mitral regurgitation [Figure B]. The patient was offered elective mitral valve repair, but refused.

Comment

Cardiac valves, myocardium and coronary arteries may be affected in infective endocarditis by several pathophysiologic mechanisms. However, acute congestive heart failure in infective endocarditis is mainly due to valve destruction resulting in valvular regurgitation [1]. In patients with valvular involvement, leaflet dysfunction is more common than annular or chordae tendinae involvement (in cases involving the atrioventricular valves) and is the leading cause of hemodynamic impairment

in the course of infective endocarditis. Leaflet dysfunction may be due to interference by vegetation, a preexisting structural abnormality, leaflet retraction during the healing phase, or leaflet perforation [2]. *Streptococcus viridans* as a cause of native-valve endocarditis usually affects damaged valves with an underlying pathology and is characterized by a subacute course. The presence of pulmonary rales and dyspnea on admission, along with a holosystolic apical murmur and mild left atrial enlargement on echocardiography, indicate that our patient most probably presented a subacute course of infective endocarditis [3].

Mitral leaflet perforation is an uncommon finding in infective endocarditis and might not be detected by transthoracic echocardiography. However, autopsy studies confirmed leaflet perforation in 8–20% of patients dying from infective endocardi-

tis [4]. Moreover, in a selected group of patients with infective endocarditis scheduled for mitral valve repair in a tertiary referral center, nearly 60% had perforation of a mitral valve leaflet [5].

We therefore suggest that although uncommon, mitral valve perforation should be suspected in cases of infective endocarditis with preserved leaflet coaptation on echocardiography and auscultatory and color Doppler findings of severe mitral regurgitation.

References

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