

MCQ Answer 1: A. Fastidious organisms

MCQ 1 Explanation:

The most common cause of culture-negative infective endocarditis in patients who have not been treated previously with antibiotics is fastidious organisms (1). In our patient, serology for Bartonella, Pasteurella and Coxiella was negative, but the Brucella antibody titer was 1:160 (reference range <1:20). Brucella titers higher than 1:160 in conjunction with a compatible clinical presentation are considered highly suggestive of infection especially in a non-endemic area (2), (3). Brucellosis can affect any organ system and cardiac involvement is rare, but endocarditis is the main cause of death due to brucellosis. Ideally, the diagnosis should be made by culture, however this test has a low sensitivity, is time-consuming, and poses a health risk for laboratory staff (4).

HACEK organisms used to be considered the most common agent of culture-negative endocarditis, but with the current blood culture techniques, they can be easily isolated when incubated for at least five days. In our patient, the HACEK organism culture was negative at 5 days (5).

Antibacterial therapy prior to blood culture sampling is a common cause of culture negative endocarditis. Our patient received empiric antibiotic therapy after the blood cultures were drawn.

Valvular vegetations can be caused by noninfectious conditions and should be considered in the differential diagnoses of any patient with endocarditis. Nonbacterial thrombotic endocarditis (NBTE), such as marantic or Libman-Sachs endocarditis, happens in the setting of systemic lupus erythematosus, malignancy, or hypercoagulable state. The vegetations of NBTE are composed of fibrin thrombi that usually deposit on normal or minimally degenerated valves. The occurrence of NBTE on prosthetic valves is extremely rare, with just few case reports documented in the literature.

MCQ Answer 2: C. Treat with IV antibiotics and perform valve replacement

MCQ 2 Explanation:

Most patients with Brucella endocarditis require both antibiotic treatment and valve replacement, although there are few reported cases of patients being successfully treated with IV antibiotics alone (6). The selection of antibiotics is based on small case series and reports, with the combination of an aminoglycoside, doxycycline, and rifampin being the most commonly used. The duration of the IV treatment is not clear, ranging from 6 weeks to 6 months. Observational trials have shown that early surgical intervention in patients with infective endocarditis and heart failure is associated with lower 1 year mortality (7). Although our patient had an indication for surgery, a third valve replacement was not performed. Cardiothoracic surgeons from two medical centers decided that the operative risk was too high. She was treated with antibiotics for 6 weeks, and at a subsequent visit the Brucella titer was negative.