When the Heart Whispers and the Spine Screams: A Case of Culture Negative Endocarditis Presenting with Bilateral Leg Weakness

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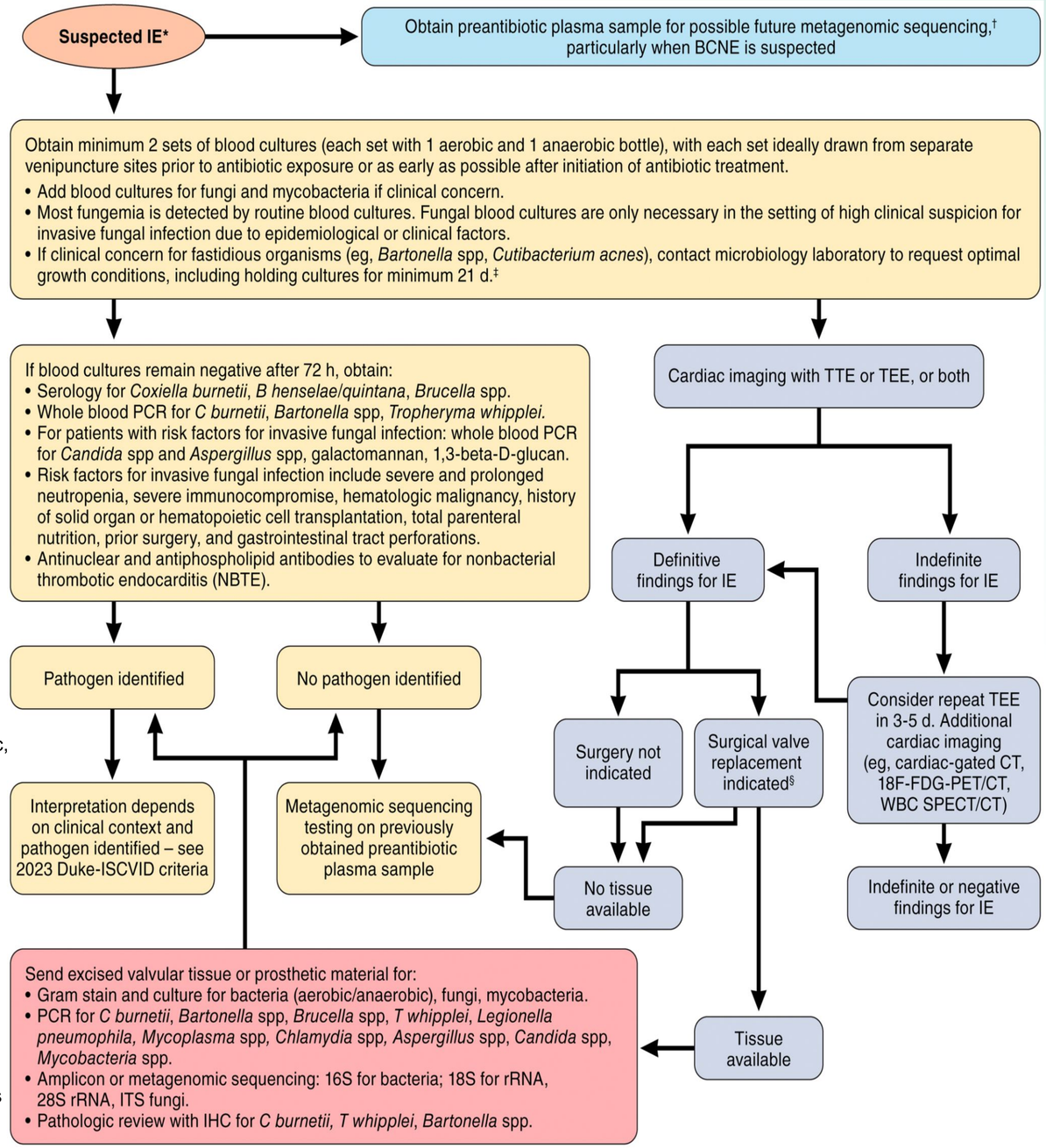
Background

A positive blood culture is a major clinical criterion for confirming infective endocarditis) and is often the first clue that IE may be considered in the differential diagnosis.Moreover, identification of a pathogen and its susceptibility to antimicrobials is imperative for providing optimal therapy in IE cases. Unfortunately, in up to 30% of these cases, blood cultures are negative, primarily due to antibiotic exposure before blood culture collection or infection with either fastidious or nonculturable microorganisms.

Blood culture-negative endocarditis (BCNE) refers to endocarditis with no definitive microbiologic etiology following inoculation of at least three independently obtained blood samples in a standard blood-culture system, with negative cultures after five days of incubation.

HOPI

64 years old male with past medical history of CAD, hypertension presented with 2 days of bilateral lower limb weakness, urinary retention and shortness of breathe.On initial presentation, he was altered, hypotensive and tachypnic, but afebrile.Laboratory evaluation showed a rising troponin (377 → 800 → 4670), creatinine 5.5 with BUN 69 consistent with acute kidney injury, and potassium 5.7. WBC count was 7,000. Inflammatory markers (ESR, CRP) and procalcitonin (6.7) were elevated, as was D-dimer. EKG revealed normal sinus rhythm. Chest X-ray showed interstitial edema without consolidation, V/Q scan was unremarkable, and transthoracic echocardiogram demonstrated preserved ejection fraction (60%) with no significant valvular defect. He was found to have urinary retenson and foley catheter was inserted.His AKI was likely secondary to his hypotension, home antihypertensive (lisinopril) and urinary retention. MRI L-S spine suggested lumbar epidural abscess. Blood culture was negative. Patient was emperically treated with linezolid and ceftriaxone. A repeat echo 5 days after the admission revealed vegetation in mitral valve.



Discussion

Infective endocarditis is a life-threatening condition with diverse presentations. Although culture-positive IE remains the diagnostic standard, 2.5–31% of cases are culture-negative, often due to prior antibiotic exposure, fastidious organisms, or non-infective causes such as non-bacterial thrombotic endocarditis. Culture-negative IE poses major diagnostic and therapeutic challenges, with higher morbidity from delayed recognition and treatment.Spinal epidural abscess can occur as a complication of IE via hematogenous spread or septic embolization.

In suspected IE with systemic signs or complications such as epidural abscess, a negative initial echocardiogram does not rule out disease since vegetations may develop later. Repeat imaging is critical when suspicion remains high. Although no established link exists between RSV vaccination and IE, recent immunizations should be routinely discussed to identify possible immune-related effects that may influence diagnosis or disease course.

This case is notable for possible culture-negative IE presenting without fever or leukocytosis but with elevated inflammatory markers, rapidly progressive mitral valve vegetation despite an initially normal echocardiogram, and neurological symptoms from a lumbar epidural abscess. Blood cultures remained negative, no infectious source was identified, and the patient had recently received an RSV vaccine, suggesting a possible but unproven immune link. This highlights the difficulty of diagnosing IE in the absence of classic signs and the importance of high suspicion and repeat imaging.

Reference

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