

ECG DILEMMA

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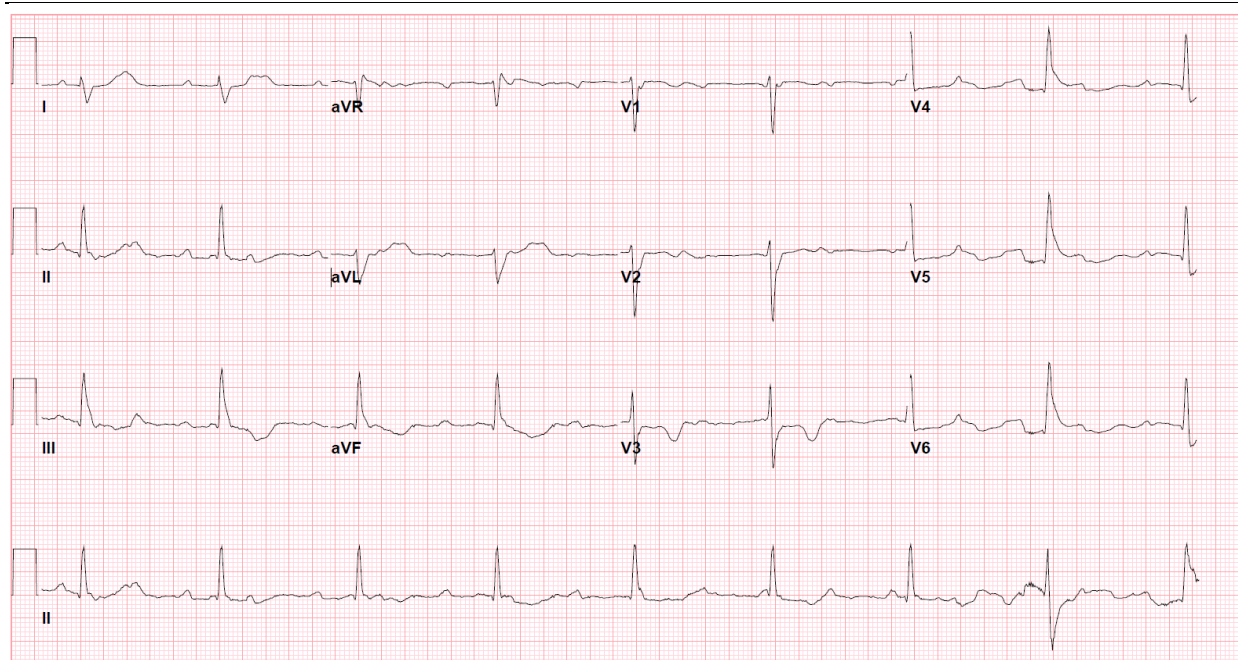
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A 48-year-old white male presented to the emergency room (ER) with 5-day history of fever and chills. He also reported chest pain, which he described as heaviness and radiating to the left arm. He reports generalized weakness. He has no significant past medical history. He was told to have a murmur since childhood. He does not have orthopnea nor paroxysmal nocturnal dyspnea. Vitals on examination were: Heart rate 30 bpm, blood pressure 100/60 mm Hg. Physical examination: Ejection systolic murmur grade 3/6 heard at the right upper sternal border and radiating to both carotids, lungs were clear to auscultation, skin and extremity examination was normal. Laboratory studies obtained in the ER: WBC 26,900/ μ l, hemoglobin 12.2 g/dl, BUN 23 mg/dl creatinine 0.97 mg/dl, troponin I 0.3 ng/ml, hemoglobin A1c 9.2%. Blood culture results obtained the next day showed 4 of 4 cultures positive for Gram positive cocci in chains. Electrocardiogram obtained is shown below. Transthoracic echocardiogram was performed – valves were not adequately visualized due to poor imaging windows but showed mild mitral and tricuspid regurgitation, aortic valve was calcified with moderate stenosis.



Which cardiac valve involvement most likely explains the etiology for the below finding?

- a. Mitral valve
- b. Pulmonic valve
- c. Aortic valve
- d. Tricuspid valve

See the answer on the next page.

Answer

C. Aortic valve

Clinical presentation is suggestive of possible infective endocarditis per modified Duke criteria (bacteremia, fever and diseased aortic valve). The patient likely has a bicuspid aortic valve. The 12-lead electrocardiogram shows sinus tachycardia (P wave rate), complete heart block with a junctional escape rhythm and occasional premature ventricular contractions in addition to right axis deviation and nonspecific ST-T changes. First degree atrio-ventricular (AV) block is usually the first sign of perivalvular extension in patients with aortic valve endocarditis. Presence of a heart block in a patient with infective endocarditis is an ominous sign, as it most likely indicates an AV node involvement by an evolving aortic root abscess. Perivalvular extension from mitral and tricuspid valve endocarditis also have been reported to cause heart block. Perivalvular extension is an indication for surgery in patients with infective endocarditis because medical therapy alone may not be sufficient. In this patient, a temporary pacemaker was placed and he underwent a trans-esophageal echocardiogram confirming bicuspid aortic valve with vegetation and aortic root abscess. Patient underwent emergent surgery, a root abscess was drained and debrided followed by successful replacement of the aortic root.

Notes

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References:

1. Graupner C., Vilacosta I., SanRomán J. Periannular extension of infective endocarditis. *J Am Coll Cardiol.* 2002;39:1204–1211
2. Baddour LM, Wilson WR, Bayer AS, et al. Infective endocarditis in adults: diagnosis, antimicrobial therapy, and management of complications: a scientific statement for healthcare professionals from the American Heart Association. *Circulation* 2015;132:1435-86.