

**Answer: e) Atrial fibrillation with complete heart block**

**Teaching Point:**

A slow regular ventricular rate in a patient with concurrent atrial fibrillation, as seen in this ECG, is diagnostic of complete heart block. Atrial fibrillation creates a diagnostic dilemma for identifying AV nodal disease or block. Close scrutiny should be placed on R-R intervals to identify patterns or regularity (1). Clinicians should be wary of a regular heart rate in a patient with persistent atrial fibrillation, especially in those using digitalis. If an AV nodal block is identified, it may be transient, and a search for reversible causes is indicated as in all cases of complete heart block prior to pacemaker placement. Electrolyte abnormalities, ischemia, and medications remain the leading reversible causes (2,3).

The patient in this case was transferred to the Emergency Department and admitted for further observation. Ischemia was ruled out. Carvedilol was held, and he was diuresed. He continued to demonstrate adequate chronotropic response with exertion. The complete heart block soon resolved, and he was diuresed to euvolemia. Pacemaker placement was deferred given the transient nature of the AV block in the context of recent beta-blocker usage. He was discharged home with continuous heart rhythm monitoring without any further evidence of complete heart block.

**References:**

1. Urbach JR, Grauman JJ, Straus SH. Quantitative Methods for the Recognition of Atrioventricular Junctional Rhythms in Atrial Fibrillation. *Circulation*. 1969; 39: 803-817.
2. Kojic EM, Hardarson T, Sigfusson N, Sigvaldason H. The prevalence and prognosis of third-degree atrioventricular conduction block: the Reykjavik study. *J Intern Med*. 1999 Jul;246(1):81-6.
3. Epstein AE et al. ACC/AHA/HRS 2008 Guidelines for Device-Based Therapy of Cardiac Rhythm Abnormalities. *Circulation*. 2008 May 27;117(21):e350-408.

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