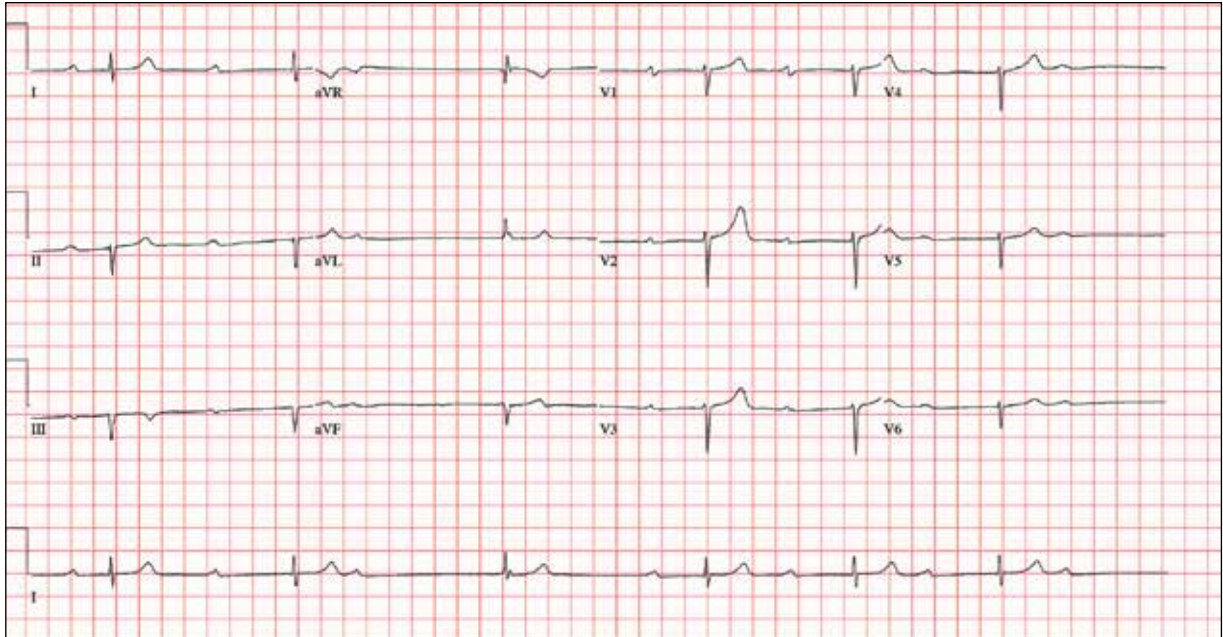


A Double Dose of Trouble



An 82-year-old man is referred from a nearby Alzheimer care facility following an episode of postural hypotension. While trying to get out of bed, he experienced near-syncope, which was observed by a nurse caring for another patient in the same room. The patient was helped back into bed, and the resident care provider was summoned.

A careful examination ruled out any injury sustained when the patient's knees buckled and he fell to the ground. However, he was found to have profound bra-

dycardia with a pulse of 30 beats/min. Emergency medical services were called, and the patient was transported to your facility for further evaluation.

You find the patient to be pleasant but mildly confused. He is in no distress. A review of the limited available records shows that he has had Alzheimer disease for four years; it has been relatively stable, with no recent changes in cognition. His history includes an inferior myocardial infarction (MI) at age 68 and hypertension. The latter has been treated with diuretics and β -blockers, although the doses have not been changed since his MI. Other remarkable items in the history include hypothyroidism, type 2 diabetes, cholecystectomy, and appendectomy. He has significant osteoarthritis in both knees but does not require a cane or other device to ambulate.

The patient is a retired iron

worker from the local foundry. He is a widower with two adult children who live remotely and do not visit. He was a heavy drinker in his younger years and smoked one to two packs of cigarettes per day until his MI. He has abstained from alcohol and tobacco since his wife's death six years ago.

His medication list includes a daily aspirin, furosemide, potassium chloride, propranolol, and levothyroxine. He is said to be allergic to penicillin, but there is no record of him ever receiving it.

The review of systems is difficult to obtain due to the patient's confusion. He has not had any recent infectious illnesses, according to the accompanying nurse from the Alzheimer facility.

Physical exam reveals a disheveled but otherwise pleasant man. He can remember only one out of three words when asked to recite immediately after hearing them. Vital signs include a blood

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pressure of 86/48 mm Hg; pulse, 40 beats/min; respiratory rate, 14 breaths/min⁻¹; and temperature, 98.4°F. His weight is 163 lb and his height, 66 in. The patient wears corrective lenses and hearing aids, but the batteries in the latter are dead. Regardless, he can hear you if you speak loudly.

Pertinent physical findings include scattered crackles in both lung bases, a regularly irregular slow heart rate, a grade III/VI systolic murmur that radiates to the neck, and well-healed surgical scars on the abdomen consistent with the surgeries described in the history. There appear to be no gross focal neurologic findings.

An ECG reveals a ventricular rate of 38 beats/min; PR interval, not measured; QRS duration, 78

ms; QT/QTc interval, 434/345 ms; P axis, 25°; R axis, -78°; and T axis, 13°. What is your interpretation of this ECG?

ANSWER

This ECG demonstrates marked sinus bradycardia with a second-degree atrioventricular (AV) block (Mobitz I). Other findings include left-axis deviation, an old inferior MI, and poor R-wave progression.

Second-degree Mobitz I block is present in a 3:1 pattern of progressive prolongation of the PR interval until the third beat, where there is block in the AV node preventing conduction of the P wave to the ventricles. This is typically caused by progressive fatigue within the AV node until block occurs, then the cycle repeats.

Left-axis deviation is evidenced by a QRS axis of -78°. An old inferior MI is signified by the significant Q waves in leads II, III, and aVF. Finally, poor R-wave progression is demonstrated by small R waves in all of the precordial leads.

This ECG represented a significant change from one obtained three months earlier, during a routine outpatient visit. Careful review of the records at the Alzheimer facility revealed that the patient had received twice his usual dose of propranolol on three consecutive days. His rhythm returned to a baseline sinus rhythm (at 68 beats/min) after his β -blocker was withheld for two days, and no further intervention was needed. **CR**