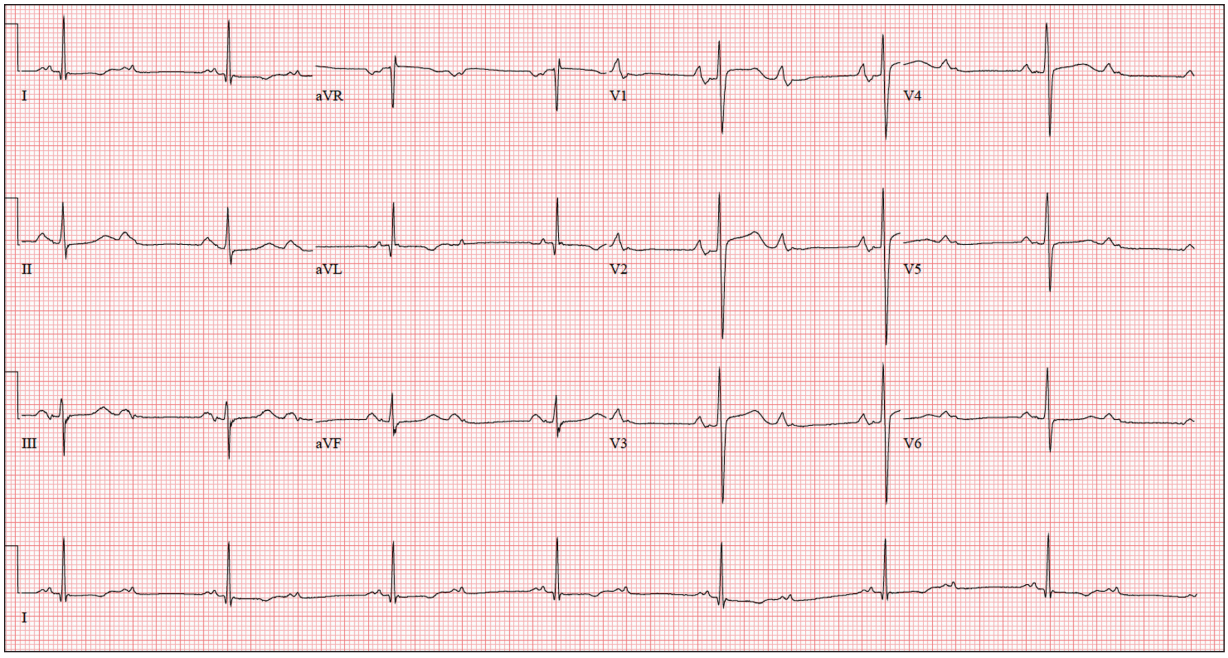
What Does This Man Need (Besides Milk & Cookies)?



A 74-year-old man has been a resident of a skilled nursing facility for seven years and is well known to the staff. This morning, when the medical assistant performed a routine vital sign check, she noticed the patient's heart rate was in the 40s. This newly discovered bradycardia, coupled with a four-day history of lethargy, prompts the facility to transfer the patient to your emergency department for evaluation.

Lyle W. Larson, PhD, PA-C, is clinical faculty in the Department of Medicine, Division of Cardiology, Cardiac Electrophysiology, at the University of Washington, Seattle.

The patient has a history of hypertension, hypothyroidism, chronic obstructive pulmonary disease, GERD, osteoarthritis, and dementia. Surgical history includes appendectomy, cholecystectomy, and left hip replacement. The patient's multiple chronic conditions are well managed with medications, including a β-blocker, hydrochlorothiazide, levothyroxine, and an inhaler. He receives protein and vitamin supplements daily and is allergic to penicillin.

There is a remote history of smoking (from his youth and tour of duty in the Korean War), although the patient says he hasn't smoked in 30 years. He has "never touched" alcohol, because his father died of complications from alcoholism at age 45.

The patient's wife died of a stroke 11 years ago. His son (and family) visit him twice weekly, bringing chocolate milk and cookies that the patient anxiously awaits.

The review of systems is remarkable for a recent cold (resolved), urinary retention, and loose stools. The patient's appetite is intact. He also exhibits evidence of short-term memory loss; however, this is sporadic.

Vital signs on arrival include a blood pressure of 158/88 mm Hg; pulse, 48 beats/min and regular; respiratory rate, 14 breaths/min; and temperature, 97.6°F. His weight is 174 lb and his height, 69 in.

Pertinent findings on the physical exam include mild cataracts bilaterally, a right carotid bruit, no evidence of elevated neck veins, and late expiratory wheezes in both bases. The cardiac exam is

remarkable for a regular rhythm with a heart rate of 42 beats/min. There is a grade II/VI early systolic murmur at the left upper sternal border but no radiation, extra heart sounds, or rubs. The abdomen is soft and nontender, with old surgical scars, and the abdominal aorta is easily palpable. The extremities exhibit full range of motion without peripheral edema, and osteoarthritic changes are evident in both hands.

An ECG shows a ventricular rate of 43 beats/min; PR interval, 198 ms; QRS duration, 96 ms; QT/QTc interval, 464/392 ms; P axis, 60°; R axis, 4°; and T axis, 107°. What is your interpretation of this ECG?

ANSWER

This ECG is representative of sinus rhythm with second-degree atrioventricular block with 2:1 conduction; possible left atrial enlargement; and ST-T wave abnormalities suspicious for lateral ischemia.

Sinus rhythm is evidenced by the P waves that march through at a rate that is consistently double that of the QRS rate (82 beats/min). The PR interval in the conducted beats remains constant, with every other P wave blocked from conducting into the ventricles.

The biphasic P wave seen in lead V_1 does not meet criteria for left atrial enlargement (P wave in lead I ≥ 110 ms, terminal negative P wave in lead V_1 ≥ 1 mm^2) but is suspicious. Finally, ST-T wave elevations in leads V_2-V_4 are suspicious for ventricular septal ischemia.

The patient underwent placement of a dual-chamber permanent pacemaker. He has done well since. **CR**