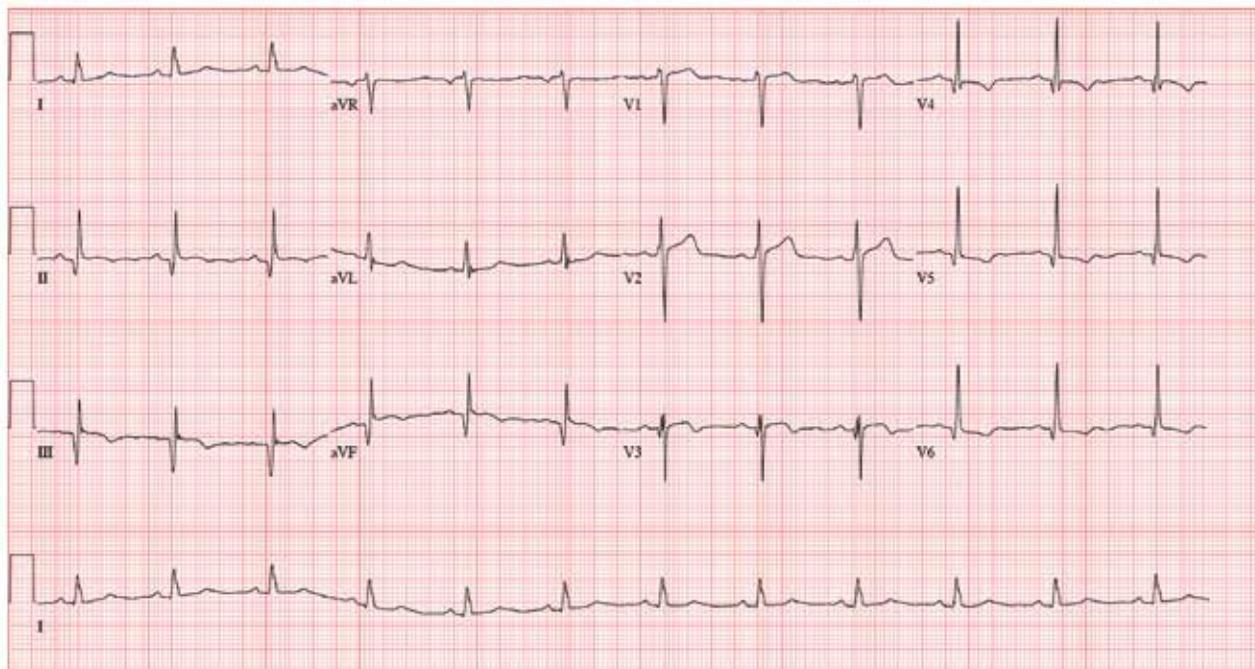


Hanging by a Thread

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A 54-year-old man presents for preoperative workup for surgical repair of a partial tear of his right rotator cuff. He sustained the injury about 8 months ago, while rock climbing. His clinical work-up included MRI, magnetic resonance arthrogram, and dynamic musculoskeletal ultrasound. Initial treatment included physical therapy and 2 corticosteroid injections, without relief. A repeat arthrogram showed no resolution of the tear and revealed tendon retraction and muscular atrophy. The patient declined further physical therapy and opted for surgical intervention instead, because the injury is in his dominant shoulder and the pain continues to interfere with his job as a general contractor.

His medical history is positive for hypertension and hypercholesterolemia, which have been managed with medications. There is also a history of myocardial infarction (MI), which occurred 3 years ago when he

was lifting a heavy truss at a job site; it manifested as acute chest pain, shortness of breath, and diaphoresis. He waited 3 days before seeking medical care because he “needed to get that project done.” He has had no further chest pain, but he’s felt “a twinge” now and again in the past 2 months. He denies shortness of breath, dyspnea on exertion, or exertional chest pain. He has had no palpitations, syncope, or near-syncope.

His current medications include diltiazem, atorvastatin, and isosorbide. He tried metoprolol but did not like how he felt when taking it. He has no known drug allergies.

Family history is positive for familial hyperlipidemia on his father’s side. His father died of a heart attack at age 51. His mother has type 2 diabetes mellitus. His 2 older brothers have had MIs; his younger sister has no known health issues.

The patient is a self-employed general contractor. He has been married for 20 years and has a 21-year-old son who works for him. He smokes 1 to 1.5 packs a day and takes a shot of bourbon every night before dinner.

A review of systems reveals an 8-lb weight gain over the past 6 months. He denies fever, chills, and gastro-



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intestinal and urologic symptoms. He believes he is depressed because his rotator cuff injury prevents him from doing what he would like.

Vital signs include a blood pressure of 138/88 mm Hg; pulse, 72 beats/min; respiratory rate, 14 breaths/min; O₂ saturation, 98% on room air; and temperature, 97.4°F. His height is 70 in and his weight, 208 lb.

Physical exam reveals an anxious male in no distress wearing a sling on his right upper extremity. The HEENT exam is remarkable for corrective lenses. There are no lesions in the oropharynx, and his tobacco-stained teeth are in otherwise good repair. The neck is supple, and there are no carotid bruits, jugular venous distention, or thyromegaly. The pulmonary exam reveals coarse, scattered crackles with end-expiratory wheezing that clears with coughing.

Cardiac exam reveals a regular rate and rhythm of 72 beats/min. There are no murmurs, extra heart sounds, or rubs.

The abdomen is soft and nontender without palpable organomegaly or pulsatile masses. The lower extremities reveal no edema. The right upper extremity exam is deferred because the patient is very apprehensive about any movement of his shoulder. Peripheral pulses are strong and equal bilaterally. The neurologic exam is grossly intact.

As part of the preoperative workup, an ECG is ordered. It shows a ventricular rate of 72 beats/min; PR interval, 158 ms; QRS duration, 106 ms; QT/QTc interval, 400/438 ms; P axis, 33°; R axis, 38°; and T axis, -15°. What is your interpretation of this ECG?

ANSWER

The correct interpretation includes normal sinus rhythm, inferior MI, possible anterior MI, and ST-T wave abnormalities.

Normal sinus rhythm is evidenced by a P wave for every QRS and a QRS for every P wave with a normal PR interval and a rate > 60 and < 100 beats/min.

An old inferior MI is indicated by the Q waves in inferior leads II, III, and aVF. The absence of ST-segment elevation in these leads also contributes to the diagnosis of an old rather than new MI. Possible anterior MI can be inferred from the poor R-wave progression in leads V₁ through V₃ with the absence of ST elevation.

ST-T wave abnormalities are evidenced by the chronic ST-segment elevation in V₁ and V₂ with T-wave inversions in leads V₃ through V₆ and in aVF. These may be due to remodeling and/or ECG lead placement.

The patient was subsequently cleared for his shoulder repair.

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