Slow regular rhythm in a disoriented patient

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Figure. Electrocardiogram recorded on hospital admission. See text for explication.

A 65-year-old woman with a history of high blood pressure, diabetes mellitus, hyperlipidemia, chronic kidney disease, and stroke went to a walk-in clinic complaining of intermittent neck, left shoulder, and arm pain for several days. After being diagnosed with pneumonia and started on antibiotics, the patient went home. The pain became worse and constant 2 days later, and several hours thereafter her family found her disoriented and diaphoretic. An electrocardiogram on hospital admission showed atrial fibrillation, complete atrioventricular block, and a regular junctional escape rhythm at a rate of 37 beats/min (*Figure*). QRS, ST, and T changes indicated acute inferoposterolateral myocardial infarction, and the QT interval was long (604 msec; QTc 562).

A survey of 11 studies of the culprit lesion sites in acute inferior myocardial infarction found right coronary artery to left circumflex coronary artery ratios that ranged from 2.2:1 to 7.0:1 with a mean of 4:1 (1). Furthermore, the artery to

the AV node is a branch of the right 90% of the time and of the left circumflex only 10% of the time. Thus, there are good reasons for suspecting the right coronary artery as the culprit. Two findings, however, are common in left circumflex occlusions, but uncommon in right occlusions: ST depression in both leads V₁ and V₂ and ST depression ≥ 0.1 mV (1 mm) in lead aVR (1).

Coronary arteriography, the ultimate clinical arbiter, demonstrated atherothrombotic occlusion in the middle portion of a dominant left circumflex coronary artery. This was treated with a bare metal stent, and a temporary transvenous electronic ventricular pacemaker increased the rate to

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60 beats/min. Serum troponin I peaked at 75 ng/mL; reference, <0.04 ng/mL. Unfortunately, although atrioventricular block decreased to second and then first degree over 2 days, the patient remained poorly responsive for 6 days, suffered transient kidney failure requiring hemodialysis, and had acute respiratory distress syndrome requiring endotracheal ventilation for 12 days. The prolonged intubation caused dysphagia necessitating total parenteral nutrition via a percutaneous indwelling central catheter. Thrombocytopenia, seemingly induced by eptifibatide, abated after the drug was stopped. After 4 weeks of hospitalization, the patient was well enough to be transferred to an inpatient rehabilitation facility.

The electrocardiographic lesson is that because a dominant left circumflex coronary artery supplies not only the usual distribution of the left circumflex, but also most of the usual distribution of the right, occlusion of a dominant circumflex usually causes a large infarct that has electrocardiographic features of both circumflex and right occlusions. The more important lesson is that failure to recognize an impending myocardial infarction often results in a clinical catastrophe.

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1. Nair R, Glancy DL. ECG discrimination between right and left circumflex coronary arterial occlusion in patients with acute inferior myocardial infarction: value of old criteria and use of lead aVR. *Chest* 2002;122(1):134–139.