Chest Pain in a 56-Year-Old Man

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A man without prior symptoms of heart disease came to the emergency department soon after the onset of chest pain, and an electrocardiogram (ECG) was recorded (Figure 1).

Figure 1. Electrocardiogram recorded in the emergency department. See text for explication.
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ECG of the Month
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DIAGNOSIS: Normal sinus rhythm; P waves in lead V1 suggesting left atrial enlargement; and Q waves, ST-segment elevation, and inverted T waves indicating anterolateral myocardial infarct of indeterminate age, possibly recent.

The patient’s emergency department diagnosis was acute ST-segment elevation myocardial infarct, and his treatment included thrombolytic therapy. The rise in his cardiac markers was surprisingly small. Because the patient had no prior history or symptoms of heart disease, no search was made for a previous electrocardiogram (ECG) before beginning treatment. The patient, in fact, had had an electrocardiogram recorded at the same hospital as a preoperative routine three years earlier (Figure 2) before resection of a pilonidal cyst, which was uneventful. The two ECGs were identical.

Even with repeated questioning the patient could not remember being told of heart disease or an abnormal ECG and denied cardiac symptoms before the day of this admission. Unrecognized myocardial infarcts are common, which was mentioned by Herrick in the original English-language description of acute myocardial infarction. Although there may be no symptoms, that is probably uncommon, and atypical symptoms that do not cause the patient to seek medical attention or that are misdiagnosed by the physician are probably more common. In fact, failure to recognize a myocardial infarct is one of the commonest causes of law suits against emergency room physicians.

ST-segment elevation of 1.0 mm or greater persisting in leads with abnormal Q waves for four weeks or more after an acute myocardial infarct is a criterion commonly used to diagnose a ventricular aneurysm. Because three years earlier the patient had no cardiac symptoms and his ECG was identical to the one on the current admission, he probably had a ventricular aneurysm at that time due to an infarct that could have occurred weeks to years earlier. His chest pain on the current admission was due to a small infarct that did not change his already markedly abnormal ECG.

Angiography revealed a large anterolateral true left ventricular aneurysm filled with clot and severe 3-vessel coronary arterial disease. The aneurysm was resected and

Figure 2. Electrocardiogram (ECG) recorded three years earlier than the ECG in Figure 1 and virtually identical to it. There is normal sinus rhythm. The negative P-wave deflection in lead V1 is ≥ 1 mm deep and 1 mm wide suggesting left atrial enlargement. Large Q waves, ST-segment elevation, and T-wave inversion in leads I, aVL, V2 – V6 indicate anterolateral myocardial infarct of indeterminate age, possibly recent. Knowing that the changes have persisted for at least three years makes the diagnosis on the ECG in Figure 1 of an anterolateral left ventricular aneurysm due to an old infarct.
the coronaries bypassed without complication. The patient was last seen six years later when he came with prostate cancer. He has not been seen since Hurricane Katrina.

Although “all is well that ends well” sounds good, this patient’s care had many shortcomings that could have ended his life. First, if a physician orders a test, here the initial ECG, he should find the result, which here would have made the diagnosis of myocardial infarct and coronary arterial disease. Second, the cardiologist reading the first ECG should have determined that the ordering physician knew that it showed an infarct that may well have been recent. Third, virtually all ECGs are now stored in a computer program and are easily retrieved, and determining that an ECG recorded three years earlier was identical to the current one would have negated the diagnosis of acute ST-segment elevation myocardial infarction and would have avoided thrombolytic therapy that had more downside than upside, especially in a patient with a left ventricular aneurysm full of clot.

REFERENCES


Dr. Glancy is a professor in the Section of Cardiology, Department of Medicine, Louisiana State University Health Sciences Center, New Orleans (LSUHSC-NO).

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