ECG tips
Unusual ECG for Acute Myocardial Infarction

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An 81-year-old Thai woman came to emergency department with severe typical angina for four hours and she had stable hemodynamics at that time. This was her initial 12-lead ECG. What was her diagnosis? What should be the proper management?

Answer: Interestingly, this ECG has shown the inversion of P-waves, QRS complexes, and T-waves in conventionally recorded lead I. Regression of R wave amplitudes in precordial leads strongly suggested of dextrocardia. The appearance of “tall R-wave in lead V1” would hint us to diagnose this condition. The other possible diagnosis was the reversal of the right and left arm electrodes which could have negative P-wave in lead I, leads II and III are reversed, leads aVR and aVL are reversed, and lead aVF is correct (1,2). However, unlike dextrocardia, the morphology of the precordial leads is practically unaffected.

Nonetheless, there were ST segment elevation in leads I, aVL, V4-6 and horizontal ST segment depression in leads III and aVF.

After alternately placed electrodes at mirror-imaged positions, there were surprisingly horizontal ST segment depression in leads I, aVL, V4-6 as shown in Figure 2. Laboratory finding showed that peak creatine kinase-MB level was 27.3 ng/ml and peak troponin T level was 0.81 ng/ml. The patient was diagnosed as non ST-segment elevation myocardial infarction.

This patient was admitted to cardiac care unit and received anticoagulant, antiplatelet agents and underwent coronary angiogram within 96 hours later. There were dextrocardia and discrete 80% stenosis at mid left circumflex artery. Direct stenting was successfully performed.

Figure 1. initial ECG
Figure 2. ECG after placing electrodes at mirror-imaged positions

References
2. Chou’s Electrocardiography In Clinical Practice. Fifth edition : W.B. Saunders 2001; p 300