

Errors in Electrocardiogram Acquisition or Myocardial Infarction

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Introduction

Although numerous additional lead placement mistakes are possible, the typical right arm/left arm lead switch is clearly visible. Even if the less frequent ones can be challenging to spot, mistakes are crucial in clinical settings because they can lead to incorrect diagnosis [1]. With the potential to reduce electrode insertion errors, the suggested technical adjustment could result in cost, time, and data savings [2].

Case Report

During a routine checkup for an unrelated condition, a fifty-year-old man with fresh T-wave inversions in the 12-lead ECG was observed with hypertension. Despite not having a history of diabetes or coronary disease, the patient still had dyslipidemia. He took a statin in addition to a beta-blocker and calcium-blocker combo to effectively control his hypertension.

The physical examination revealed no abnormalities. The left posterior fascicular block was indicated by the ECG's sinus rhythm at 54 beats per minute, rS configuration in leads I and aVL, thin Q waves in leads III and aVF, and deeply inverted T waves in both leads. In We noticed a sharp change in V2 with a qR complex and an inverted T wave in the precordial leads (Figure 1). The ECG was initially thought to indicate a recent inferior and posterior myocardial infarction (MI). It was decided to conduct a new ECG before a cardiological examination (Figure 2), which turned out to be normal with a QRS axis without a deep S wave at 13 degrees in aVF and III. Similar to V2, the transition zone also showed up in V3 with a typical R-wave progression and no sign of the qR complex from V2. This control ECG resembled an ECG taken a year prior. It was clear at this time that a technological error during the ECG capture had to be taken into account.

Discussion

An inferior myocardial infarction with inverted T waves in leads III and aVF may be suspected in a patient with left anterior fascicular block when electrodes from the left arm and left leg are switched [1, 3].

Right arm and left leg cross-over lead exchange frequently results in a picture of an inferior myocardial infarction with an inverted T wave and nonsinus rhythm [1, 4]. In our case, the qR complex shape in V2 did not coincide with either V1 or V3, indicating an aberrant transition in the precordial leads. If there is a significant difference, lead reversal should be detected in the ECG pattern between leads that indicate electrical activity in a comparable anatomical area, for instance, if lead I and aVL QRS complex differs from that of V5 and V6 [1]. Due to the exchange between the electrodes on the left arm and V2, the ECG morphology recorded in the frontal plane in this instance can be regarded as a combination of frontal and horizontal planes [5]. The application of the electrode in the incorrect location or the connection of the cable are examples of improper lead placement.

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