

## Value of automated ECG interpretation in diagnosis of cardiac disorders

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### Abstract

Background: Electrocardiography (ECG) is a valuable device in the assessment of cardiovascular diseases. Recent medical software developments such as the invention of modern automated ECG interpreters have greatly facilitated the work of electrocardiographers and cardiologists. We present our experience in the use of one such device in the routine reporting of ۲۰۰ successive ECGs recorded in our Cardiac Care Unit and Cardiac Emergency Ward. Methods: The interpretations of ۲۰۰ ECGs provided by the GE-digital ECG device were chosen and compared with those supplied by four cardiologists in a single blind manner. All statistical analyses were performed by using SPSS version ۱۱.۵ for windows. A p value of less than ۰.۰۵ was considered statistically significant. Results: There was a diagnostic match between the interpretations by the device and those by the cardiologists in ۱۰۷ (۵۳.۵%) cases as opposed to a diagnostic mismatch in ۹۳ cases (۴۶.۵%). The matching rate in the interpretations of myocardial ischemic disorders was high, which means practically all the ischemic cases diagnosed by the device were confirmed by the cardiologists. Only in ۱۲ cases myocardial infarction or ischemic changes were reported by the cardiologists, while they were missed by the device. As regards rhythm disorders, the sensitivity and specificity of the device were ۱۷.۷% and ۷۵.۷%, respectively. With respect to conductive disorders, the respective sensitivity and specificity of the device were ۷۰% and ۹۶.۶%, respectively. Finally, in the case of structural disorders, the interpretations of the device were ۹۲.۸% sensitive and ۸۳.۳% specific. Conclusion: According to the results of our study and similar researches, it seems that the interpretations of an automated ECG device in diagnosing the ischemic and structural disorders of the heart are reliable. The device, however, should not be relied upon when assessing conduction disorders and dysrhythmias. We, therefore, recommend that the users of digital ECG devices recheck the digital interpretations in those cases.

### Author keywords

Conductive disorders; Electrocardiography; Myocardial disease; Rhythm

### Indexed Keywords

**EMTREE medical terms:** article; atrioventricular block; cardiologist; clinical trial; complete heart block; computer assisted diagnosis; computer program; controlled clinical trial; controlled study; diagnostic accuracy; diagnostic error; diagnostic value; electrocardiography; heart arrhythmia; heart atrium enlargement; heart disease; heart infarction; heart left bundle branch block; heart left ventricle hypertrophy; heart muscle conduction disturbance; heart muscle ischemia; heart right bundle branch block; heart right ventricle hypertrophy; heart sinoatrial block; human; major clinical study; reliability; sensitivity and specificity; single blind procedure

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