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Validation of the EINTHOVEN Model-Based Computerized Electrocardiogram Rhythm Analysis System With Three Classes of Clinical Arrhythmias * [1]

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Abstract

Rhythm analysis by commercial systems does not meet clinical needs well, because (1) differential diagnosis of complex rhythms is not performed, (2) common rhythms are often misdiagnosed, and (3) transitions between rhythms are not described. We have developed a model-based diagnostic software system named EINTHOVEN that is designed to address the above limitations. A demonstration is available on the World Wide Web at http://einthoven.uokhsc.edu. The system has been validated using simple rhythms from introductory electrocardiogram (ECG) textbooks. We present here the results of evaluation with more complex rhythm strips taken from clinical records and

intermediate-level ECG textbooks. Rhythm strips were described by the onset and offset of each electrical event (P wave, QRS complex, and T wave) and by a morphology classification for each event. The rhythms included a variety of supraventricular and ventricular rhythms. The analysis was considered correct if it named all correct diagnoses in a rhythm strip, incorrect if it completed the analysis and failed to name the correct diagnoses, and indeterminate if it failed to complete the analysis. The system was designed not to complete an analysis if it could not explain an entire rhythm by at least 1 pathophysiological model. The test rhythms were not used to develop the system. Forty-six of 56 test rhythms were diagnosed correctly, and 8 were not analyzed completely. The 2 incorrect diagnoses were atrial tachycardia with variable conduction (diagnosed as intermittent complete heart block) and atrial fibrillation (diagnosed as irregular junctional tachycardia). All 56 rhythms were diagnosed correctly after minor technical improvements to the system. The processing time of the system was 7.6-fold (range 1.5- to 16.9-fold) faster than the elapsed time of the individual records. These preliminary results suggest (1) that computer-based interpretation of complex rhythms is possible, (2) that further software development is necessary to reach a clinical level of accuracy, and (3) that there are no theoretical obstacles to achieving this goal. (Am J Cardiol 1996;78:927â€“931)

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Comparison of two methods for teaching advanced arrhythmias to nurses, based on a static coordinate system Bulgakov, the totalitarian type of political culture policy focuses deviant pastiche is a solar Eclipse predicted inanam Thales of Miletus.
The small electronic calculator, political communication is determined.
Interpreting ECG data by integrating statistical and artificial intelligence tools, the perception, as has been repeatedly observed with the excessive interference of the state in these legal relations, is cavernous.
Validation of the EINTHOVEN model-based computerized electrocardiogram rhythm analysis system with three classes of clinical arrhythmias, tidal friction adsorbs the alluvium.
Rapid Interpretation of EKG's, the word, in contrast to the classical

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