Reducing the Risk of Misdiagnosis Using New Visualized Method for ECG

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A 12-lead electrocardiograms(ECGs) is widely used. Medical doctors depend on experience for diagnosing arrhythmia. Yet, they may make a wrong arrhythmia diagnosis. Although convenient automated diagnosis devices for ECGs have been developed and widely used in hospitals, there still remains several difficulties in reading ECGs data for conducting proper and accurate diagnosis to cardiac arrhythmia. In order to reduce these difficulties in diagnosis, a suitable and efficient method for ECGs analysis was developed by adapting a visualized program. The program was made using data of electronic ECGs of 400 pieces opened on website. The functions of the program are as follows, -"Gamma correction analysis" multiplies small waves by gamma correction factor and expends. -"Timing analysis" superposes successive waves and analyzes timings that R-waves or P-waves occur. -"3D-VCG analysis" shows conduction systems three-dimensionally and visualizes the excitement of the heart in order. -"FFT, Wavelet analysis" visualizes the power spectrum of ECGs and do not miss abnormal heart rates. -"Brugada syndrome analysis" calculates value of like a measured in ajimaline-lead and emphasizes characteristic J-waves. As a result of analyzing the real ECGs, small P-waves of complete AV-block by Gamma correction analysis were clearly visualized. Also, occurrence place of premature ventricular contraction (PVC) was also detected through 3D-VCG analysis. The precision improvement of the arrhythmia diagnosis is enabled by combining a conventional ECGs device with the program of the new method.

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