

Artificial intelligence in electrocardiography

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Artificial intelligence (AI) using machine learning (ML) intends to mimic the works of the neural networks of the human brain. AI is the ability to make computers or machines learn to solve problems that would otherwise require human effort. Advances in computing power have made it possible to analyze large amounts of data quickly with consistency, accuracy and enable more precision on various fields of medicine, especially in cardiology. In the last 100 years rules-based interpretation of the electrocardiogram (ECG) is widely used by physicians, or, in the last 50 years, in existing devices. Still, both have known limitations that may adversely affect medical decision-making. The application of AI/ML to the ECG has already dramatically affected electrocardiography to assist in diagnosis, stratification and management. AI/ML of the ECG can identify existing or occult structural or other heart disease, including hypertrophic cardiomyopathy, amyloid heart disease, heart failure, aortic stenosis, pulmonary hypertension, arrhythmias, ST-segment changes, QT prolongation, and other ECG abnormalities. AI/ML can improve quality of ECG signals by removing noise and artefacts, and extract features not visible to human eye (heart rate variability, beat to beat intervals, etc). Conclusions based on AI offer guide strategies to improve outcomes. The use of AI in ECG analysis has several benefits, including the quick and precise detection causes of symptomatic cardiac problems or silent cardiac diseases. It has the potential to help physicians with interpretation, diagnosis, risk assessment, and disease management.^{1,2} In the future, despite some concerns about the risks of AI technology, AI is expected to play important role in ECG diagnosis and management of various fields in medicine and cardiology as more data become available and more sophisticated algorithms are developed.

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LITERATURE 

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