Application of artificial intelligence in cardiology

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Artificial intelligence (AI) is an integral part of clinical decision support systems (CDSS) - in this context, AI refers to a collection of computational concepts that can be summarized as a computer ability to generalize learning in order to autonomously and efficiently achieve complex tasks. Machine learning (ML) techniques, such as Artificial Neural Networks (ANNs) and support vector machines (SVMs), are based on models with parameters that can be optimally corrected using different algorithms, and it achieves this by using algorithms to improve task performance without needing to be explicitly programmed and can be broadly divided into supervised and unsupervised approaches. With this objective, the term deep learning has been introduced to characterize ML based on deep ANN architectures with multiple layers of artificial neurons. It has turned out to be very good at discovering intricate structures in high dimensional data and is, therefore, applicable to many domains in science, business and government[1]. Furthermore, deep learning models can learn from input data, including numbers, text or even combinations of input types[2]. Cardiologists make decisions for patient care from data, and they tend to have access to richer quantitative data on patients compared with many specialties. AI requires close collaboration among computer scientists, engineers, clinicians, other healthcare professionals, and regulatory authorities to identify the most relevant problems to be solved. AI is currently being investigated in several cardiology domains, from CDSS to imaging interpretation, nuclear cardiac imaging as well as voice technology in cardiac practice. As a result, researchers have proposed new innovative ideas and practices related to the diagnostic and therapeutic management of cardiovascular diseases, promising ground-breaking developments for both cardiovascular sciences and care[3]. Integrating AI into cardiology practice is a change that the profession should embrace. AI has the potential to provide physicians access to actionable data in even greater depth than ever before. Yet, despite the apparent potential, the impact of AI in current clinical practice is still limited.

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LITERATURE

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