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Use of machine learning for prognosis and therapy of adult congenital heart disease

A new study shows that incorporating modern deep machine learning networks into prognostic models is feasible in congenital heart disease. The researchers used data from over 10 000 patients and 44,000 medical reports available at a tertiary centre for congenital heart disease and pulmonary hypertension and combined this information with demographic, laboratory, ECG, and exercise data. They then constructed a prognostic model that could be incorporated in electronic health record systems.

The biggest advantage of the approach used by the researchers is that it obviates the need for human data cleaning and collection thus allowing to easily extend data sources in future projects. In addition, the model can be retrained and adjusted to new data sources without much effort. This could be used to predict outcome and provide clinical guidance based on national or international ACHD datasets.

The use of artificial intelligence has increased quite significantly over the last three years. There has been major advancement in image recognition, text classification, and generative models. Personal computers are now equipped with graphic processing units and can be better utilised to structure data. If data is properly harvested, it can allow clinicians to track quality of care in ACHD and improve delivery of care.

The use of artificial intelligence and machine learning models is increasing quite rapidly in cardiology. These technologies can enhance the effectiveness of cardiologists and can enable quicker, more efficient and more personalised care by incorporating data sources, genomic information, mobile device data and data from outside the healthcare sector such as social media. Machine learning was initially being used mainly for image classification but today, it is being utilised for building clinical prediction models in cardiovascular disease such as risk stratification models for heart failure and arrhythmic events as well as pilot studies attempting to predict risk of congenital heart surgery with machine learning algorithms. This particular study demonstrates how such models may be applied in the setting of a life-long chronic disease such as ACHD.

Source: European Heart Journal
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