The Effect of Continuous Parameters on the Diagnosis of Coronary Artery Disease Using Artificial Neural Networks

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Abstract

Background & Aim*:* Coronary artery disease is among the common diseases in societies. The best method of assessing coronary artery diseases is through angiography. This study aimed at investigating the effect of disease parameters on the diagnosis of coronary artery disease using artificial neural networks.

Methods**:** This analytic study included a database of 200 non-attributable records. In this research, different neural networks such as MLP, LVQ and BR were used to predict whether the coronary arteries were blocked or not. In addition, the importance of the continuous risk factors of coronary artery disease was studied.

Results**:** The most important criteria of the diagnosis systems are the specificity and sensitivity indicators. In this study, these two indicators were calculated in the test. The best accuracy was observed in MLP, with a back-error propagation of 88%. It was also observed that the removal of discrete parameters positively affects neural network convergence speed so that the prediction accuracy could reach 85%.

Conclusion**:** Angiography is a high-cost invasive procedure with risk factors such as death, stroke and heart attack. Therefore, noninvasive methods should be applied in order to minimize error and maximize reliability to predict the disease. Using data mining methods can decrease the complications of the disease.

Keyword**:** Coronary Artery Disease, Artificial Neural Network, Continuous Parameters of Coronary Artery