Diagnosis of Coronary Artery Disease using Neuro-fuzzy-based Method

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Abstract

Background & Aim: Coronary artery disease is one of the most common diseases in different societies. Coronary angiography is established as one of the best methods for diagnosis of this disease. Angiography is an invasive and costly method. Furthermore, it is associated with risks such as death, heart attack, and stroke. Thus, this study introduces a neuro-fuzzy-based method which can help the physicians in prediction of patient’s coronary artery condition.

Methods: This is an analytical study carried on 200 patients of Cardiovascular Center in Torbat Heydarieh. Patient records include 13 risk factors and are non-attributable. In this work, models are presented based on data mining methods for the diagnosis of coronary artery disease. Furthermore, artificial neural network and neuro-fuzzy method were used for modeling the diagnosis of coronary artery disease.

Results: The mean square error (MSE) of prediction for artificial neural network and neuro-fuzzy method were p=0.2574 and p=0.0007, respectively.

Conclusion: Since angiography is invasive and associated with various risks, we suggest the use of non-invasive methods with low error and high reliability. New data mining strategies can be effective in reducing the mentioned complications.

Keywords: Coronary artery disease, Artificial neural network, Neuro-fuzzy method