

Comparing Performance of Neural Network and Decision Tree in Prediction of Myocardial Infarction

Authors : Reza Safdari, Goli Arji, Robab Abdolkhani Maryam zahmatkeshan

Abstract : Background and purpose: Cardiovascular diseases are among the most common diseases in all societies. The most important step in minimizing myocardial infarction and its complications is to minimize its risk factors. The amount of medical data is increasingly growing. Medical data mining has a great potential for transforming these data into information. Using data mining techniques to generate predictive models for identifying those at risk for reducing the effects of the disease is very helpful. The present study aimed to collect data related to risk factors of heart infarction from patients' medical record and developed predicting models using data mining algorithm. Methods: The present work was an analytical study conducted on a database containing 350 records. Data were related to patients admitted to Shahid Rajaei specialized cardiovascular hospital, Iran, in 2011. Data were collected using a four-sectioned data collection form. Data analysis was performed using SPSS and Clementine version 12. Seven predictive algorithms and one algorithm-based model for predicting association rules were applied to the data. Accuracy, precision, sensitivity, specificity, as well as positive and negative predictive values were determined and the final model was obtained. Results: five parameters, including hypertension, DLP, tobacco smoking, diabetes, and A+ blood group, were the most critical risk factors of myocardial infarction. Among the models, the neural network model was found to have the highest sensitivity, indicating its ability to successfully diagnose the disease. Conclusion: Risk prediction models have great potentials in facilitating the management of a patient with a specific disease. Therefore, health interventions or change in their life style can be conducted based on these models for improving the health conditions of the individuals at risk.

Keywords : decision trees, neural network, myocardial infarction, Data Mining

Conference Title : ICHI 2015 : International Conference on Health Informatics

Conference Location : Istanbul, Türkiye

Conference Dates : January 26-27, 2015