Forecasting delay times in post-exposure prophylaxis to human animal bite injuries in Central Iran: A decision tree analysis

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Abstract

Background and Aim:

Data mining in medical sciences provides countless opportunities for demonstrating hidden patterns of a data set. These patterns can help general physicians and health workers in preventing diseases. This study aimed to forecast delay times in post-exposure prophylaxis (PEP) to human animal bite injuries in central Iran using a decision tree analysis.

Materials and Methods:

The data of 2072 human animal bite cases were collected from Centers for Disease Control and Prevention unit of Qom Provincial Health Center, Iran from January 2017 to December 2018. The information related to animal bite incidents, including the biting animal characteristics and data on the bitten humans, was obtained by investigating the epidemiological survey forms of human animal bites. The decision tree model was applied to forecast the delay time of receiving PEP.

Results:

A delay of more than 48 h in the initiation of PEP was estimated among 12.73% of animal bite victims. The most important variables to predict delay time of receiving PEP were the species of biting animal, time and cause of animal bite occurrences in 24 h a day, respectively. Hence, the model showed a delay in the initiation of PEP if the biting animal was a cattle or, a carnivore, and the time of being bitten was from 7 am to 1 pm, or if the animal was carnivore and the time of being bitten was between 1 and 7 pm, and the cause of animal bite was playing with the animal.

Conclusion:

Based on the findings of the study on different variables affecting the initiation of PEP, the concepts related to animal bite and rabies, including the timely injection of anti-rabies vaccine to prevent rabies, it is a must to educate and train, all the people, especially housewives and students.

Keywords: decision tree analysis, human animal bite injuries, Iran, post-exposure prophylaxis