

Classification and Prediction of Neonatal Jaundice Using Neural Networks

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Abstract

Jaundice (hyperbilirubinemia) is a common disease in newborn babies. Under certain circumstances, elevated bilirubin levels may have detrimental neurological effects. In some cases, phototherapy is needed to lower the level of total serum bilirubin, which indicates the presence and severity of jaundice. Recently, diagnosis and treatment modeling of disease have been considered by many researchers. In this paper, we present two models for classification and prediction of neonatal jaundice. The models are based on recorded data of Iranian Neonates. This study is oriented on the basis of following procedures: a short review on physiology of Jaundice, and then description of the models. Two three-layer feed forward neural networks were used in the modeling. The neural network model for classification is able to specify the type of jaundice, and the model for prediction can evaluate the risk of jaundice for newborns. These models can be used to decrease the risk in the critical cases as well as the cost of treatment.

Keywords: Neonatal jaundice; Modeling; Serum bilirubin; Jaundice diagnosis; Prediction

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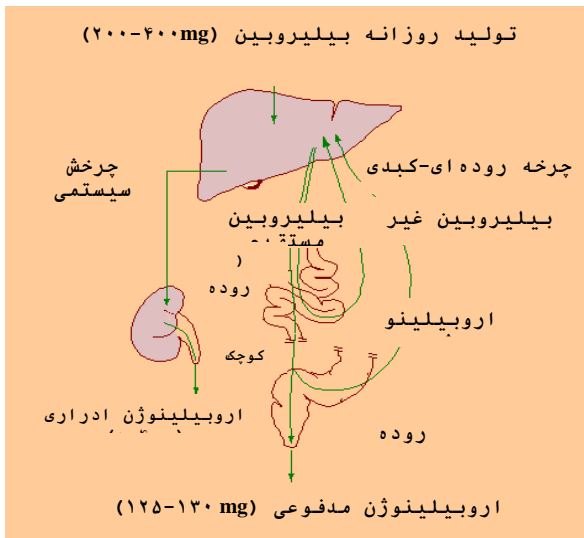
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¹G6PD

mg/dl

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¹Glucose-6-phosphate dehydrogenase

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Rh

TSB

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G6PD

(%)

(CC)

:

(SE)

$$CC\% = \frac{TP + TN}{TP + TN + FP + FN} \quad ()$$

$$SE\% = \frac{TP}{TP + FP} \quad ()$$

TN

TP

FP

FN

()

%

(%)	(%)	(%)	(%)	
				TSB
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≤	≤	≤	
≤	≤	≤	<

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G6PD

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