Prediction of Glucose-6-Phosphate Dehydrogenase Deficiency in Newborns

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Objective: To evaluate the positive and negative predictive value of the positive family history of G6PD in predicting the actual G6PD of newborns compared to the mean total serum bilirubin (TSB) level for one-week.

Design: A Prospective Study.

Setting: Salmaniya Medical Complex and Jidhafs Maternity Hospital, Bahrain.

Method: The mothers filled a survey, and the newborns underwent serum bilirubin check during the first week of life (day one, day two to four and day five to seven). The G6PD activity status was tested as part of the newborn screen for all the newborns in Bahrain.

Result: Four hundred twenty-seven newborns were included in the study; males were 219 (51.3%). Two hundred eighty-eight (67.4%) of the newborns had G6PD normal activity and 139 (32.6%) were G6PD deficient. Two hundred fifty-one (58.8%) had a positive family history of G6PD deficiency while 176 (41.2%) did not have a family history of G6PD deficiency. The positive predictive value (PPV) for family history of G6PD deficiency is 47.4%, while the negative predictive value (NPV) is 89.1%. The mean serum bilirubin level for newborns with G6PD reduced activity was 139±52µmol/L. The serum bilirubin level was higher if the previous sibling required phototherapy, 157 µmol/L ± 50 µmol/L (P-value<0.001).

Conclusion: Family history could be helpful for clinicians but it should be considered with caution. The negative predictive value is 89.1%, which means that 20 (4.7%) of the newborns had no family history of G6PD deficiency and still have G6PD deficiency.

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