

Interference of elevated serum bilirubin in serum creatinine estimation by Jaffe method and enzymatic method

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Diseases related to the liver and kidney are encountered widely. Especially kidney disease is a major health problem in Sri Lanka. Furthermore, many studies have been conducted to determine the interfering substances on *Jaffe* method and *enzymatic* method in determining the serum creatinine level. Serum bilirubin has been explored as an interfering substance. However, the results have been inconclusive. The study aimed to determine whether there is an association between elevated serum bilirubin levels and creatinine levels, or whether serum bilirubin contributes to an error which affects the laboratory techniques. This analytical and cross-sectional study was conducted among 49 patients with elevated serum bilirubin levels at teaching hospitals Peradeniya and Kandy. A venous blood sample was obtained from the patients. Measurement of serum bilirubin and creatinine levels before and after photolysis were performed by *Indiko* clinical chemistry analyzer. Photolysis procedure was performed to reduce the high serum bilirubin levels to more physiological levels. The Wilcoxon Signed Rank Test indicated that the median post-photolysis test ranks were statistically significantly higher than the median pre-photolysis test ranks by the *Jaffe* method ($Z= 5.959$, $P < 0.005$). Moreover, the median post-photolysis test ranks were statistically significantly higher than the median pre-photolysis test ranks by the *enzymatic* method ($Z= 5.595$, $P < 0.005$). The correlation coefficient (r) for bilirubin concentration and creatinine concentration by *Jaffe* method before photolysis was -0.398 , $p= 0.005$. The r for bilirubin concentration and creatinine concentration by *enzymatic* method before photolysis was -0.342 , $P= 0.016$. Both correlations were statistically significant negative correlations. In present study elevated serum bilirubin levels had statistically significant interferences on both *Jaffe* and enzymatic method. By considering the mean differences, mean difference by *Jaffe* method was higher than enzymatic method. Therefore, it is recommended that *enzymatic* method may be used in measuring serum creatinine in patients with hyperbilirubinemia.

Key words: Bilirubin, Creatinine, *Jaffe* method, *enzymatic* method, Photolysis