

INTERFERENCE OF BILIRUBIN IN SERUM CREATININE ESTIMATION BY JAFFE REACTION AND CREATINASE METHOD

RK Dissanayake¹, KKPT Ranaweera¹,
AMB Priyadarshani^{1#} and P Dias²

¹Department of Allied Health Sciences, Faculty of Medical Sciences,
University of Sri Jayewardenepura, Sri Lanka

²Department of Statistics, Faculty of Applied Sciences,
University of Sri Jayewardenepura, Sri Lanka

#priyadarshani@sjp.ac.lk

Serum creatinine determination is crucial in assessing renal functions. Jaffe reaction is used world-wide in serum creatinine estimation. It has been reported that bilirubin affects Jaffe reaction causing underestimation. However, Creatinase method has little interference but is comparatively more expensive. The objective of this study was to compare the creatinine concentrations of serum with different bilirubin levels using Jaffe reaction and Creatinase method. Three serum pools were placed in an infant phototherapy incubator for 18 hours to photolysis the bilirubin. Serum creatinine concentration of each pool was measured by Creatinase method and the values were 0.51, 2.41 and 7.33mg/dL. Each serum pool was then spiked with eleven different bilirubin concentrations. The bilirubin concentrations of the spiked serum were 0, 3, 6, 9, 12, 15, 18, 21, 24, 27 and 30mg/dL. The total bilirubin, creatinine by Jaffe reaction and Creatinase method were

measured by Indiko™ clinical and specialty chemistry system. Results were analyzed by linear regression analysis. According to the Creatinase method, there was no significant underestimation in serum with 0.51mg/dL of creatinine but Jaffe reaction showed a significant underestimation from bilirubin concentration of 7.18mg/dL. In serum with 2.41mg/dL of creatinine, Creatinase method and Jaffe reaction were given significant underestimations by bilirubin concentrations of 9.05 and 5.64mg/dL, respectively. In serum of 7.33mg/dL creatinine, significant underestimations were given from bilirubin levels of 3.6 and 8.18mg/dL by Creatinase method and Jaffe reaction, respectively. According to the present study, Creatinase method is reliable in estimation of serum creatinine of ≤ 0.51 mg/dL.

Keywords: Jaffe Reaction, Creatinase Method, Serum Bilirubin