

Development of Predictive Model to Identify Neonatal Sepsis in Colombo South Teaching Hospital Kalubowila and Castle Street Hospital for Women

KAL Shashinika^{1#}, RMAM Rathnayake¹, HHT Gayan¹, AIS Mendis¹, M Gamage²,
R Tudugala³ and JMKB Jayasekara¹

¹ *Department of Medical Laboratory Sciences, Faculty of Allied Health Sciences, General Sir John Kotelawala Defence University, Sri Lanka*

² *Department of Paediatrics, University of Sri Jayawardenepura, Sri Lanka*

³ *Department of Radiography and Radiotherapy, Faculty of Allied Health Sciences, General Sir John Kotelawala Defence University, Sri Lanka*

#limalihcc@gmail.com

Neonatal sepsis is a life-threatening illness caused by the blood invasion of microorganisms within the first 28 days of life. As the signs and symptoms of neonatal sepsis are non-specific, and early diagnosis and prompt treatment remain a challenge. Episodes of sepsis suspected cases in Colombo South Teaching Hospital Kalubowila and Castle Street Hospital for Women were retrospectively reviewed during the period of 1st January to 31st December 2020. Two hundred and nineteen suspected neonatal sepsis cases were recruited and 116 were confirmed as sepsis and 103 as non-sepsis. Demographic, clinical characteristics of the neonate and laboratory investigations (CRP, FBC and biochemical investigations) were collected from all suspected cases (n=219). The mean values of scale parameters were compared within study groups using an independent sample t-test. The associations among the study groups were analysed using the cross tab chi-square test. The Backward: LR binary logistic regression model was developed to determine a prediction model for the sepsis diagnosis. The parameters which showed a significant difference between sepsis and non-sepsis (Total and indirect bilirubin levels, monocyte %, MCHC; p<0.05) and significantly associated parameters with neonatal sepsis (gestational age, birth weight, APGAR 1st min, APGAR 5th min, APGAR 10th min and CRP value of the day before the blood culture taken; p<0.05) were combinedly analysed in a logistic regression model. The model was statistically significant (p<0.001, correct classification 69.2%) and gestational age (<28 week), APGAR score less than 7 at 5 minutes, CRP values greater than 5 of the day before the blood culture was taken and monocyte percentage of blood were identified as the predictors of neonatal sepsis.

Keywords: *neonatal sepsis, CRP, predictive model*