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Maternal and neonatal factors predicting sepsis in neonates on the septic pathway

Christy Varghese

The University of Manchester, UK

Introduction: Early-onset neonatal sepsis is defined as infection within 72 hours of delivery within a healthy baby. There are a number of risk factors for neonatal sepsis identified. Babies with at least 2 risk factors are placed on the sepsis pathway and started on antibiotics awaiting results of investigations such as blood culture, C-reactive protein (CRP) and possible lumbar puncture. The study looked at those neonates on the sepsis pathway to identify factors that may likely predict sepsis defined in this study as a CRP of >10 mg/L.

Material & Methods: This was a retrospective study conducted in the northwest of England focusing on Royal Preston Hospital. The study used data from neonates who were treated for suspected sepsis within the first 72 hours post-birth. A total of 102 babies were selected using random selection and information regarding various variables was obtained. Data was collected from the Lancashire Teaching Hospital Trust (LTHTr) electronic documentation softwares. The initial analysis involved univariate and bivariate analysis. Multivariate logistic regression was also performed to understand which factors were the best predictors to assess severity of sepsis.

Results: There were a total of 55 (53.9%) male neonates and 47 (46.1%) female neonates. There were only 4 neonates with culture proven sepsis. Bivariate analysis showed more mature neonates are more likely to have higher CRP. Multiple regression analysis of neonatal factors found gestation age ($p < 0.0001$) and respiratory distress ($p = 0.0121$) to be the two significant variables in predicting increased CRP levels.

Conclusion: In conclusion, a third of neonates had high CRP. There was only one neonate with a positive blood culture that grew GBS. 22 lumbar punctures were conducted which were all negative. The study showed that neonates on the sepsis pathway are more likely to have high CRP if they showed respiratory distress. In addition to this, within the population of neonates on the pathway, neonates who are more mature are more likely to have a high CRP as a proxy for sepsis. Paradoxically, babies with prolonged ROM were less likely to have high CRP which was found to be statistically significant but clinically less significant. No other factors could accurately predict sepsis in neonates.

Biography

Christy Varghese is currently a 4th year Medical Student at the University of Manchester undertaking clinical placement at the Royal Preston Hospital, Preston. He was part of the Pediatric Society at the university. He undertook a 10 week research dissertation project under the guidance of Dr. Dhia Mahmood, Neonatologist at Royal Preston Hospital.

christy.varghese@student.manchester.ac.uk

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