Original Article
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Risk Factors and Prediction Models for Retinopathy of Prematurity

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Abstract

***Objectives*: To develop a simple prediction model for the pre-screening of Retinopathy of Prematurity (ROP) among preterm babies.**

***Methods:* This was a prospective study. The test dataset (January 2007 until December 2010) was used to construct risk prediction models, and the validation dataset (January 2011 until March 2012) was used to validate the models developed from the test dataset. Two prediction models were produced using the test dataset based on logistic regression equations in which the development of ROP was used as the outcome.**

***Results:* The sensitivity and specificity for model 1 [gestational age (GA), birth weight (BW), intraventricular haemorrhage (IVH) and respiratory distress syndrome (RDS)] was 82 % and 81.7%, respectively; for model 2, (GA and BW) the sensitivity and specificity were 80.5% and 80.3%, respectively.**

***Conclusion:* Model 2 was preferable, as it only required two predictors (GA and BW). Our models can be used for the early prevention of ROP to avoid poor outcomes.**

Keywords: *model, prematurity, prediction, risk, retinopathy*

Introduction

Retinopathy of prematurity (ROP), formerly known as retrolental fibroplasia, was first described by Terry in 1942 (1). It is a disease confined to preterm infants and is a disorder of the immature retinal vasculature that can progress to tractional retinal detachment and complete blindness. In highly developed countries, it is estimated to be responsible for 3% to 11% of childhood blindness, and in moderately developed countries such as Malaysia and Brazil, it represents approximately 60% of childhood blindness (2). The incidence of ROP-induced-blindness in poorly developed regions such as Sub-Saharan Africa and Kenya is low due to the lack of facilities permitting the survival of pre-term babies. In highly developed countries, ROP is confined to infants with very low birth weight (VLBW) and gestational age (GA) ≤ 31 weeks (3), whereas the same cannot be said for moderately developed countries.

Screening of preterm babies for ROP is challenging. The increased survival of very immature babies results in a need to screen a large population of babies at risk of developing severe ROP, which is costly. In addition, a high degree of cooperation between neonatology and ophthalmology staff is required (4). In developing countries, there are additional difficulties due to the unequal distribution of the Neonatal Intensive Care Unit (NICU) facilities, lack of skilled ophthalmologists and lack of awareness among neonatologists (4).

