Ventilatory support and surfactant use in extremely low birth infants over a decade at a tertiary hospital in Johannesburg, South Africa

M N Mavunda[1], MBChB, DCH; D E Ballot[2], MBBCh, FC Paed (SA), PhD T Ramdin[1], MBBCh, FC Paed (SA), MMED (Paed), Cert Neonatology (SA)

1. Department of Paediatrics and Child Health, Charlotte Maxeke Johannesburg Academic Hospital, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa

2. Head of School of Clinical Medicine, University of the Witwatersrand, Johannesburg, South Africa

Corresponding author: M N Mavunda (m.mavunda@gmail.com)

Abstract

Background: In Southern Africa, extremely low birth weight infants (ELBWI) are a major contributor to neonatal mortality and morbidity. The ELBWI are at the greatest risk of respiratory distress syndrome (RDS), and the severity of RDS is inversely related to gestational age.

Objective: To review ventilatory support and surfactant use in ELBWI and its effect on survival of ELBWI at Charlotte Maxeke Johannesburg Academic Hospital (CMJAH), South Africa.

Methods: This was a secondary analysis of an existing database of ELBWI admitted at CMJAH neonatal unit from 01 January 2008 to 31 December 2017. The different modes of respiratory support were compared for survivors and non survivors.

Results: A total of 1 184 ELBWI were enrolled in the study with a mean birth weight of 823.6g. Respiratory distress syndrome was diagnosed in 93.2% (1 103/1 184) infants, with 88.2% (1 044/1 184) receiving respiratory support. Respiratory support was offered in the form of surfactant replacement therapy (SRT), nasal continuous positive airway pressure (NCPAP) and/or conventional mechanical ventilation (CMV). Eighty one percent (706/902) of the infants received SRT, 62% (706/1 146) received NCPAP and 20% (225/1 135) received CMV. The survival of ELBWI who received SRT was 88.3% ($p<0.001$) and for infants who received NCPAP was 65.2% ($p=0.019$). Conventional mechanical ventilation was not associated with increased survival, 19.2% ($p=0.677$). The overall survival of ELBWI during the study period was 46% (540/1184).

Conclusion: The implementation of SRT and NCPAP are effective in the management of RDS in ELBWI.

KEYWORDS: extremely low birth weight infant, surfactant, ventilation, continuous positive airway pressure