

Abstract

Background: sepsis neonatorum refers to systemic infection of the newborn. Application of severity scores in neonatal sepsis may be useful for prognostication and evaluation of the effectiveness of therapeutic protocols in the Neonatal Intensive Care Unit (NICU).

Objectives: To investigate the relationship between SNAP II score applied on septicemic neonates within the first 12 hours of their first day of admission and the outcome including persistent organ dysfunction (OD) and death separately at day 14 from enrollment and to determine the contribution of the individual parameter of SNAP II score to the risk of dying.

Patients and Methods: This observational prospective study included eighty newly admitted fullterm and preterm neonates of both gender with clinical and/or laboratory signs of neonatal sepsis. Cases were collected from the intensive care units (NICUs) of Fayoum University Hospital, El Mounira Cairo University Children Hospital and Kasr Al-Aini hospital from October 2011 to June 2012. They were subjected to detailed history taking and complete clinical examination. Sepsis was screened by sepsis screen and a concomitant blood culture. Other investigations were done relevant to the clinical situation. SNAP II score was applied for these neonates in the first day of admission. All subjects were followed until remission of OD or death, whichever was earlier, up to a maximum of 14 days.

Results: Thirty three neonates had EOS (41.3%) while 47 (58.8%) had late onset sepsis (LOS). Forty three neonates (53.8%) were boys with male to female ratio 1.16:1. The mean gestational age of the enrolled neonates was 34.95 weeks. Blood culture was positive in only 23 neonates (28.8%); sepsis screen was positive in 73 neonates (91.3%). All culture negative subjects had a positive sepsis screen. Twenty seven neonates (33.8%) died within the 14-days observation period due to septicemia, while thirty five babies (43.8%) had organ dysfunction. The median SNAP II was significantly higher in diseased babies or those who developed OD versus those who survived and improved ($P= 0.003$ and $P= 0.001$, respectively). Analysis of individual SNAP-II parameters revealed that low mean arterial pressure and lowest blood pH were significantly associated with death and organ dysfunction at day 14, ($P= 0.002$). Also hypoxemia was significantly observed in babies with persistent OD and those who died, $P < 0.001$. ROC curves for the SNAP II score ≥ 40 showed moderate predictive accuracy and 90.4% and 88.9% sensitivity for OD and death, respectively.

Conclusion and recommendation: Severely septicemic neonates with high SNAP II scores >40 have a higher risk of dying and persistent organ dysfunction. Individual SNAP II parameters do not contribute equally in prediction of mortality. Application of SNAP II should be done for all neonates admitted to NICUs to confirm its relation with all neonatal disorders for better care and prognosis.

Keywords: Mortality, Neonate, Organ dysfunction, Sepsis, SNAP II.