[4146.354] Presepsin (Soluble CD14 Subtype) in Term and Preterm Newborns: Preliminary Reference Ranges and Usefulness in the Diagnosis of Sepsis

Lorenza Pugni, Carlo Pietrasanta, Mariella Falbo, Tania Todorovic, Andrea Ronchi, Simona Perniciaro, Marina Casartelli, Claudia Vener, Silvano Milani, Fabio Mosca. NICU, Department of Clinical Sciences and Community Health, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, University of Milan, Milan, Italy; Institute of Medical Statistics and Biometrics, Department of Clinical Sciences and Community Health, Faculty of Medicine, University of Milan, Milan, Italy.

BACKGROUND: Sepsis is a major cause of morbidity and mortality in newborns. Recently, presepsin (soluble CD14 subtype, sCD14-ST) has been shown to be beneficial as sepsis marker in adults. Nevertheless, few data are available in newborns.
OBJECTIVE: To determine: 1) the reference ranges for presepsin in healthy term newborns 2) the reference ranges for presepsin in preterm newborns without clinical signs of sepsis 3) the diagnostic accuracy of presepsin as a marker of sepsis in newborns.
DESIGN/METHODS: All infants admitted to our Unit during a 18-months period are enrolled into 3 groups: 1) healthy term newborns 2) preterm newborns without clinical signs of sepsis 3) term and preterm newborns with clinical signs of sepsis. To measure presepsin, 100 microliters of blood are collected on day 3 of life in newborns of group 1 and 2 and at the following times in newborns of group 3: at the onset of clinical signs of sepsis (T0), every 12 h for the next 48 h (T1, T2, T3, T4), and at the end of antibiotic therapy (T5). C-reactive protein (CRP) is determined at the same times. Presepsin levels are determined using Pathfast® Immunoanalyzer (Mitsubishi Chemical Medience Corporation; Gepa Diagnostics).
RESULTS: Until now, we enrolled 487 newborns in group 1 (mean GA 38.9 wks, mean BW 3211 g), 168 in group 2 (mean GA 33.9 wks, mean BW 2052 g) and 42 in group 3 (mean GA 32.4 wks, mean BW 1811 g). Mean presepsin value was 650.2 pg/ml (SD 258.2; Median 603.5, Q1-Q3 468 – 794) in group 1 and 722.3 pg/ml (SD 339.4; Median 636, Q1-Q3 506 – 862) in group 2. GA, gender, ethnicity, mode of delivery, SGA, twin, maternal fever, and stained amniotic fluid did not affect presepsin levels. In group 3, mean presepsin value was 1087,5 pg/ml at T0 and decreased over time to 743 pg/ml at T5. 14/42 neonates in group 3 had a positive blood culture, 26 had a negative blood culture. Presepsin values were higher in infants with proven sepsis than in the others at T0, 1, 2, 3 and 4 ($p < .01$). CRP values were higher in infants with proven sepsis than in the others only from T2.
CONCLUSIONS: Reference ranges for presepsin, determined for the first time in a large sample of healthy term and preterm newborns, are much higher than in adults. Presepsin seems to be an accurate and early biomarker for the diagnosis of neonatal sepsis.

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