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Acta Medica Iranica
2009;47(4) : 93-96

Evaluation of CD11b Expression on Peripheral Blood Neutrophils for Early Detection of Neonatal Sepsis

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Abstract:

Neonatal sepsis is a disease of infants who are less than 1 month of age. These infants are clinically ill, and their blood culture are positive for bacteria. The reported incidence of neonatal sepsis for allinfants is 1 to 10 per 1000 live births. The mortality rate is 4.2-26%. The clinical signs are not specific and diagnosis of neonatal sepsis is one of the most difficult tasks in clinical medicine. The aim of this work was determination of CD11b sensitivity and specificity for early detection of neonatal sepsis.

We studied 65 neonates with gestational age of 27 to 38 weeks who were suspected for sepsis within the 28 days of life. Whole blood was obtained from neonates to determine CD11b expression on peripheral blood neutrophils by flow cytometry. C-Reactive protein (CRP) was measured qualitatively.

Neonates were divided into two groups. Classification was based on the result of the blood culture. In the sepsis group all of the neonates (n = 8) showed positive blood culture and clinical
symptoms. In the suspected group (n = 57) the neonates showed clinical signs but blood cultures were negative. Sensitivity and specificity of CD11b were 75%, 100% respectively. Also positive and negative predictive values of CD11b were 100% and 86% respectively.

Results of present study and previous studies showed that measurement of neutrophil surface
markers can be useful for diagnosis of infection in the early phases. Also, the quantitative
measurement of CRP in addition to CD11b further enhances the ability to diagnose infections and improves sensitivity and negative predictive value by 100%.

Keywords:

CD11b ، CR3

TUMS ID: 3611

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