Heba Ezzat Hashem et al., J Vaccines Vaccin 2015, 6:4
http://dx.doi.org/10.4172/2157-7560.C1.031

OMICS International
conferenceseries.com

7th Middle East - Global Summit and Expo on
Vaccines & Vaccination
September 28-29, 2015 Dubai, UAE

The predictive and prognostic values of neutrophil CD64, neutrophil CD11b, monocyte CD14 and presepsin in neonatal sepsis

Heba Ezzat Hashem[1], Amira Mohammed Mokhtar[1], Nahla Mohamed Zakaria Yousef[1], Shams Mohamed Kholoussi[2], Shereen Ahmed El Masry[1], Nour EL Din M Abdel Aal[1], Doaa Mohamed Abd El Aziz[1] and Raghda Mohammed Mohammed Mostafa Ghorab[1]
[1]Ain Sham University, Egypt
[2]National Research Center, Egypt

Background: Neonatal sepsis represents a diagnostic burden problem by showing minimal initial non-specific manifestations. The clinical course can be fulminate and fatal if treatment is not commenced promptly. It is therefore crucial to establish early diagnosis and initiate adequate therapy. Blood culture takes up to 7 days for results and may be inconclusive, thus there is an urgent need for a specific accurate marker for early diagnosis. The challenge of biomarker identification is reflected by the fact that over 3000 sepsis biomarker studies last years. Neutrophil, CD64, CD11b, monocyte CD14 and presepsin showed particular promise in this aspect.

Aims: In this study we assessed the utility of all mentioned markers as an early predictive and monitoring marker and the best panel of markers that can achieve the highest diagnostic performance in this disease.

Methods: Our study conducted over 9-months and included a total of 84 sepsis evaluations, neonates classified into three groups: Documented sepsis group, Clinical sepsis group and Control group. Blood samples were collected for hs-CRP, CBC, nCD64, nCD11b, mCD14, presepsin and blood culture.

Results: A statistically significant difference in levels of nCD64, presepsin and mCD14 was found in sepsis groups than in control group; however nCD64 achieves the highest diagnostic performance than the other biomarkers. Combination of 2 markers achieves the highest diagnostic and prognostic performance over a single hematological parameter.

Conclusions: We can conclude that nCD 64% represent the best early predictor and monitoring marker that can be incorporated in the routine daily work in NICU.

Mediche2010@gmail.com

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