

ABSTRACT

Introduction: Sepsis is a life-threatening organ dysfunction caused by a dysregulated host response to infection. It is still one of leading causes of death in ICU worldwide. In addition to standard parameters used in the diagnosis of sepsis, new parameters have recently appeared. Monocyte distribution width (MDW) is a readily available new early indicator of sepsis (ESId) and the only hematological FDA-approved parameter for the diagnosis of sepsis.

The aim of the work: The aim of this master thesis was to compare selected laboratory markers for the early detection of sepsis and to evaluate the MDW and other parameters depending on the clinical condition of the patients. The thesis is dealing with other problematics.

Methodology: When diagnosing sepsis, MDW was measured on Beckman Coulter DxH 900 analyzer, and other hematological parameters were measured on Sysmex XN-9000 analyzer. Anticoagulated blood samples with K₃EDTA in Sarstedt tubes were used. Inflammatory markers were measured on Atellica Analyzer and Pathfast device. Anticoagulated blood samples with lithium heparin in Sarstedt tubes were used. Total of 35 septic patients and 38 healthy donors were evaluated for various objectives.

Results: Results of comparing hematological parameters were evaluated using ROC analysis. Parameter MDW (AUC = 0.971) proved to be the most accurate compared to NLR (AUC = 0.955), WBC (AUC = 0.867), MO# (AUC = 0.709) and score ICIS (AUC = 0.953). Cut-off value MDW >20.43 (sensitivity 100, specificity 86.84) associated with Youden index and optimal cut-off value of MDW >21.41 (sensitivity 86.36, specificity 94.74) were selected from the criteria. Statistically significant addiction was found during monitoring addiction of MDW values depending on the presence of sepsis.

Conclusion: In addition to other markers used for the diagnosis of sepsis, the MDW proved to be a very accurate marker in detection of sepsis. MDW and ICIS score in combination with other biomarkers have a great potential for early sepsis diagnostics.

Key words: Sepsis, MDW, NLR, ICIS score, Beckman Coulter DxH 900, Sysmex XN-9000.