

Category :**Hematology: Other**

A185 - Performance of monocyte distribution width (mdw) for the identification of covid-19

C Morales¹ ; N Robert² ; A Mendoza² ; G Rocamora² ; A Leis¹ ; MD Quesada³ ; I Castro⁴ ; D Careaga⁴ ; L Tejedor⁴ ; R Magari⁵

¹Hospital Universitari Germans Trías i Pujol, Laboratory Medicine Department, Badalona, Spain, ²Hospital Universitari Germans Trías i Pujol, Emergency Department, Badalona, Spain, ³Hospital Universitari Germans Trías i Pujol, Microbiology Department, Badalona, Spain, ⁴Beckman Coulter Inc., Clinical Affairs, Miami, United States, ⁵Beckman Coulter Inc., Bioinformatics/Biostatistics, Miami, United States

Introduction:

This clinical study evaluated MDW, a hematology parameter that is available as part of a routine CBC-DIFF, to aid in the early identification of SARS-CoV-2 infected patients.

Methods:

A retrospective cohort study was conducted in Spain evaluating adult patients who presented to the Emergency Department (ED) with symptoms consistent of COVID-19 disease and had a CBC-DIFF performed. In this preliminary analysis, forty-five (45) RT-PCR+ patients were selected across the time frame of the study (March 18, 2020 – May 4, 2020). MDW results at baseline, based on a cut-off of 21.5 [1], were compared to RT-PCR results. The negative arm for this analysis constituted patients (N=680) enrolled in a sepsis trial performed at the same site in Spain, prior to the pandemic [1]. Laboratory test results, microbial testing and radiological studies were extracted from the medical charts. Whole blood venous samples collected in K₃EDTA were analyzed for MDW measurement on a UniCel DxH 900 analyzer (Beckman Coulter, Inc., Brea, CA).

Results:

The mean values of MDW were significantly higher in SARS-CoV-2 infected patients (RT-PCR+ = 28.64 ± 3.98 vs pre-pandemic arm= 22.00 ± 4.25 ; $p < 0.05$). ROC analysis yielded an area under the curve (AUC) of 0.889 (95% CI 0.855 – 0.923) for the initial assessment of MDW levels vs. RT-PCR. At a cut-off of 21.5 units, MDW effectively differentiated SARS-CoV-2 infected patients with a sensitivity of 100% (95% CI 92.1 – 100), specificity of 53.8% (95% CI 50.1 – 57.5), PPV of 12.53% (95% CI 9.5 – 16.36), and NPV of 100% (95% CI 98.9 – 100).

Conclusion:

An MDW cut-off of 21.5, previously validated for identification of sepsis in the ED, also reliably detects patients infected with SARS-CoV-2 virus. In this initial study, MDW demonstrated a high clinical sensitivity and negative predictive value to identify those at a lower risk for COVID-19 disease.

References:

1. Hausfater P et al. Critical Care (CRIC-D-21-00529R1) accepted for publication, May 2021