
Diagnostic Accuracy of Monocyte Distribution Width, Procalcitonin and C-Reactive Protein



Sepsis is characterised by a dysregulated host response to infection resulting in organ dysfunction. It poses a significant global health problem, with a high mortality risk and millions of patients affected annually. Epidemiological studies have shown that nearly 20% of septic patients require mechanical ventilation, leading to significant healthcare costs. Despite clinical guidelines for sepsis treatment, the early identification of high-risk septic patients remains challenging.

One of the main difficulties in the early diagnosis of sepsis is the overlap of symptoms with other diseases, making it hard to distinguish sepsis from other conditions. Additionally, there is a lack of reliable and easily accessible ancillary tests specifically designed for sepsis diagnosis. Therefore, there is a need for new and accurate biomarkers to aid in the timely diagnosis and management of sepsis.

Monocyte distribution width (MDW) is a novel biomarker used for sepsis detection. It measures the dispersion around the mean of monocyte population volume using volume, conductivity, and scatter technology. During the early phase of sepsis, MDW exhibits changes in its functional and morphologic properties, resulting in a highly heterogeneous monocyte population in response to proinflammatory signals from pathogen-associated molecular patterns.

Research has demonstrated that MDW shows good diagnostic performance in identifying sepsis compared to other biomarkers. Given these findings, a new study aimed to assess the diagnostic accuracy of MDW and compare it with that of procalcitonin (PCT) and C-reactive protein (CRP), which are commonly used biomarkers in sepsis diagnosis.

The meta-analysis included eighteen studies of adult patients with sepsis. The pooled sensitivity and specificity of MDW were found to be 84% and 68%, respectively. Significant heterogeneity was observed among the included studies, indicating variations in the diagnostic performance of MDW across different settings and patient populations. Among the included studies, eight compared the diagnostic accuracies of MDW and PCT, while five studies compared MDW with CRP.

The results showed that the area under the SROC was similar when comparing MDW with PCT and MDW with CRP, indicating comparable diagnostic performance between these markers.

These findings suggest that MDW is a reliable diagnostic biomarker for sepsis and is comparable to PCT and CRP. The results support its potential utility as a diagnostic tool in identifying sepsis in adult patients. However, there is a need for more studies to explore the combination of MDW with other biomarkers, as this may lead to improved diagnostic performance and greater accuracy in sepsis detection.

Source: [Critical Care Medicine](#)

Image Credit: iStock

Published on : Tue, 9 May 2023