

Shock 2023

View Abstract

CONTROL ID: 3909215**TITLE:** MONOCYTE ANISOCYTOSIS (MDW) IS INCREASED IN SURGICAL SEPSIS, IS ASSOCIATED WITH MDSC EXPANSION, BUT DOES NOT IMPROVE PREDICTION OF ADVERSE CLINICAL OUTCOMES**PRESENTATION TYPE:** Oral or Poster**PREFERRED TOPIC:** Sepsis**AUTHORS (FIRST NAME, LAST NAME):** Valerie E. Polcz¹, Jaimar C. Rincon¹, Muxuan Liang², Ricardo Ungaro¹, Ivanna Rocha¹, Evan L. Barrios¹, Tyler J. Loftus¹, Shawn D. Larson¹, Philip A. Efron¹, Lyle L. Moldawer¹**INSTITUTIONS (ALL):** 1. Surgery, University of Florida College of Medicine, Gainesville, FL, United States.
2. Biostatistics, University of Florida, Gainesville, FL, United States.**ABSTRACT BODY:**

Introduction: Early sepsis biomarkers are growing in appeal and utility not only for sepsis screening, but also as prognostic and personalized medicine tools. Monocyte distribution width (MDW), a biomarker indicating monocyte anisocytosis, has shown promise in accurately predicting sepsis in the emergency room. Its utility in identifying sepsis and predicting longer-term outcomes in hospital-acquired sepsis, however, is unknown. This study aims to 1) determine whether early MDW values could reliably distinguish sepsis versus sterile inflammation among critically ill surgical patients, 2) determine whether MDW predicts adverse clinical outcomes, and 3) examine the relationship between MDSC expansion and MDW.

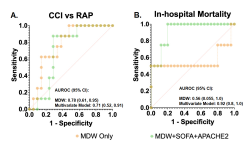
Methods: This is a post-hoc pilot analysis of a prospective observational study of critically ill, patients admitted to a surgical ICU with sepsis (n=77) or considered to be at high risk of sepsis (n=81). Healthy control subjects (n=31) were also studied. MDW was obtained from complete blood counts at multiple time points, with a subset of patients undergoing further MDW quantification of PBMC-enriched and CD66b⁺-isolated PBMCs (low density PMN-MDSCs). MDSC phenotyping was performed via flow cytometry.

Results: At the time of ICU admission, MDW was increased in septic patients versus those at risk (p=0.0006). Even after balancing sepsis and at risk patients by SOFA and APACHEII scores by propensity score matching (n=61 each), MDW was significantly higher in sepsis patients (p<0.0001). Among patients who survived to hospital discharge, MDW levels declined over time. Multivariate regression analysis incorporating APACHEII and SOFA scores demonstrated MDW was not an independent predictor of mortality, chronic critical illness or unfavorable discharge disposition in our study population. Both PMN- and MO-MDSCs were also increased in septic patients as compared with healthy adults (p<0.05). MDW from blood, PBMC and CD66b⁺ isolated cell samples were all positively correlated (all p<0.05), and there was a positive correlation between monocytic MDSCs and whole blood MDW (Pearson correlation coefficient: 0.512, p=0.0074).

Conclusions: As demonstrated previously for community-acquired sepsis, MDW values are elevated in surgical sepsis when compared with critically ill surgical ICU patients who are at high risk of becoming septic. Furthermore, MDW can reliably discriminate between sepsis and sterile inflammation among surgical patients, even after adjusting for validated measures of organ dysfunction. While future formal sample size determination is necessary, in our pilot analysis, MDW could not independently predict in-hospital or long-term mortality. Finally, these findings suggest that MDSCs from septic patients have higher MDWs, and MDSC expansion may contribute to monocyte anisocytosis.

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TABLE TITLE: (No Tables)



ROC curves of MDW values, alone and in combination with APACHEII and SOFA clinical scoring models, as predictors of in-hospital mortality or chronic critical illness (CCI) versus rapid recovery from sepsis (RAP) in our study population.

AWARDS: Travel Award

Disclosure: NO, there are no relationships to disclose.

Submission Rules Confirmation: I confirm that I have read and complied with the submission guidelines.

ARE YOU A MEMBER?:

- Valerie Polcz : Yes
- Jaimar Rincon : Yes
- Muxuan Liang : No
- Ricardo Ungaro : No
- Ivanna Rocha : No
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