

# Correlational Analysis of EAA With Other Inflammatory Markers in Critically Ill SARS-CoV-2 Patients

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## Background

- Disease severity in critically ill SARS-CoV-2 patients is not clearly defined, using current FDA approved inflammatory markers
- Endotoxin activity assay (EAA™, Spectral Diagnostic Inc.)
  - Measures level of bacterial endotoxin
  - Preliminary step to PMX-B hemoperfusion
- Recent studies suggests Endotoxin may be a marker of overall inflammation
- EAA levels incidentally high in Pts SARS-COV-2 positive

## Objectives

From March to June 2020, we began collecting EAA data on SARS-CoV-2 (+) patients with the goal of

- Determining if EAA levels correlated with other known markers of Inflammation
  - Markers of Interest
    - D-dimer
    - IL-6
    - CRP
    - LDH
    - ESR
    - Ferritin
    - WBC Count
    - Procalcitonin

## Methods

- Single-center, prospective cohort analysis of SARS-CoV-2 patients admitted to the ICU at GWH, March to June 2020
- Values collected
  - Admission to ICU, on Day 2, on Day 7
  - New onset mechanical ventilation
  - New use of vasopressors
  - New onset AKI (Cr >1.5 increase from baseline)
  - Ferritin increase to >150% baseline
  - Logistic and linear regression analyses were used to compare EAA values with markers of interest

## Results

**Table 1.** Patient demographics

| Characteristics                    |           |
|------------------------------------|-----------|
| # of SARS-COV-2 Pts with EAA Draws | 99        |
| Median age                         | 61.84 yrs |
| Gender                             |           |
| Male                               | 55%       |
| Female                             | 45%       |
| Ethnicity                          |           |
| Asian                              | 1.01%     |
| Black                              | 73.74%    |
| Hispanic                           | 21%       |
| White                              | 4.04%     |

**Table 2.** Spearman correlation coefficient ( $\rho$ ) between P-F ratios and measured biomarkers.

| Biomarker     | N   | $r_s$   | p-value       |
|---------------|-----|---------|---------------|
| CRP           | 169 | 0.2896  | <b>0.0001</b> |
| LDH           | 180 | 0.1798  | <b>0.0157</b> |
| D-dimer       | 165 | 0.1690  | <b>0.0300</b> |
| WBC           | 213 | 0.0570  | 0.4075        |
| IL-6          | 35  | 0.1439  | 0.4095        |
| Ferritin      | 173 | 0.0533  | 0.4859        |
| ESR           | 37  | 0.06757 | 0.6911        |
| Procalcitonin | 14  | 0.01433 | 0.9612        |



## Conclusions

- EAA had significant positive correlation with
  - CRP, LDH, D-dimer
- EAA did not have a significant positive correlation with
  - IL-6, Ferritin, ESR, WBC count, and procalcitonin
- EAA may have efficacy as adjunct biomarker for SARS-COV-2 patients

## Future Studies

- Explore relationship between EAA and other biomarkers
- Repeat studies in a broader patient population

## Disclosures

- Endotoxin Activity Assay Kits were provided by Spectral Medical Inc.

