

**Procalcitonin levels and antibiotic use associations with COVID-19 disease severity in the absence of bacterial co-infection of Hospitalized Adults: An observational cohort investigation**

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**ABSTRACT**

Elevated procalcitonin levels guide clinicians in antibiotic use for suspected bacterial infections. Early in the pandemic, these levels were also used with regularity in COVID-19 patients to assess for co-infection. Electronic medical records were interrogated in a cohort of hospitalized adults with COVID-19 (n=78) who experienced moderate and severe disease as defined by the Yale Impact Score (NCT05603677). Antibiotics were administered to 47.4% of all patients enrolled while the rate of bacterial co-infection in this patient population was 18.7%. Hospitalized patients with severe COVID-19 had significantly higher procalcitonin levels than those with moderate disease. Of the 55 participants with procalcitonin levels, 30 (55%) were given antibiotics while 25 (45%) were not, and only 8 patients had clinical documentation of bacterial co-infection, confirmed by blood, respiratory, or urine culture positivity. The results from this study show that in the setting of COVID-19 infection, procalcitonin is more closely linked to viral disease severity and less associated with bacterial co-infection. Procalcitonin as a prognostic tool for bacterial infection and COVID-19 disease severity warrants further investigation to ensure therapeutic measures and antibiotic stewardship are appropriately applied. More data are needed to set standardized clinical guidelines regarding procalcitonin use to ensure appropriate treatment is maintained.