

European Respiratory Society Annual Congress 2012

Abstract Number: 3194
Publication Number: P574

Abstract Group: 1.13. Clinical Problems - Other

Keyword 1: Biomarkers **Keyword 2:** Pneumonia **Keyword 3:** No keyword

Title: Procalcitonin and D-dimer to predict prognosis and clinical outcomes in severe community-acquired pneumonia (SCAP) patients

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Body: Background: Early prognostic assessment is crucial for the optimized care and treatment of patients with SCAP. The aim: We analyzed prognostic accuracy of procalcitonin (PCT), plasma D-dimer (D-d) in predicting mortality and disease severity assessment in CAP patients, relationship between their levels and in-hospital outcomes (in-hospital mortality (IHM) and length of in-hospital stay (LOS)), need for invasive mechanical ventilation (IMV) and vasopressor support (VS). Methods: 20 ICU patients with proven SCAP CURB-65 class 3,4 were enrolled to the study. Serum PCT and D-d values were measured within the first 24 hours after admission. Results: Increasing CAP severity was associated with increased PCT and D-d values ($r=0,74; p=0,05$ and $p=0,0004$, $r=0,62$ respectively). PCT in CURB-65 3 and 4 class patients was 0,73 [0,56; 5,8] vs 5,94 [4,6; 37,1] ng/ml, respectively ($p=0,03$). PCT and D-d values demonstrated statistically significant correlation with IHM ($r=0,74; p=0,005$ and $r=0,48; p=0,03$) and were higher in non-survivors than those in survivors [median] [5,94 vs 0,73 ng/ml, $p=0,01$] and [1,63 vs 1,19 mg/mL, $p=0,02$] respectively. Both PCT and D-d levels correlated with need for VS ($r=0,74; p=0,0005$ and $r=0,54; p=0,02$ respectively) and showed higher concentrations in patients requiring VS compared with those with stable haemodynamics [102 vs 0,73 ng/ml, $p=0,01$] and [1,9 vs 0,87 mg/mL, $p=0,002$] respectively. Conclusion: PCT is more reliable biomarker than D-d in predicting prognosis and clinical outcomes in SCAP pts.