

Surfactant protein D (SP-D) as a biomarker of SARS-CoV-2 infection

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Abstract:

Surfactant protein-D (SP-D) is a lung-resident protein that has emerged as a potential biomarker for COVID-19. Previous investigations on acute respiratory distress syndrome patients demonstrated a significant increment of SP-D serum levels in pathological conditions. Since SP-D is not physiologically permeable to alveoli-capillary membrane and poorly expressed by other tissues, this enhancement is likely due to an impairment of the pulmonary barrier caused by prolonged inflammation.

A retrospective study on a relatively large cohort of patients of Hospital Pio XI of Desio was conducted to assess differences of the hematic SP-D concentrations among COVID-19 patients and healthy donors and if SP-D levels resulted a risk factor for disease severity and mortality.

The first analysis, using an ANOVA-model, showed a significant difference in the mean of log SP-D levels between COVID-19 patients and healthy donors. Significant variations were also found between dead vs survived patients. Results confirm that SP-D concentrations were significantly higher for both hospitalized COVID-19 and dead patients, with threshold values of 150 and 250 ng/mL, respectively. Further analysis conducted with Logistic Mixed models, highlighted that higher SP-D levels at admission and increasing differences among follow-up and admission values resulted the strongest significant risk factors of mortality (model predictive accuracy, AUC = 0.844).

The results indicate that SP-D can be a predictive marker of COVID-19 disease and its outcome. Considering its prognostic value in terms of mortality, the early detection of SP-D levels and its follow-up in hospitalized patients should be considered to direct the therapeutic intervention.