

Role of serum albumin and proteinuria in patients with SARS-CoV-2 pneumonia

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May 18, 2020

Abstract

BACKGROUND Hypoalbuminemia is frequently observed in patients with SARS-CoV-2 infection although its underlying mechanism and relationship with clinical outcome still need to be clarified. **METHODS** We retrospectively evaluated in patients with COVID-19 hospitalized at the Fatebenefratelli-Sacco Hospital in Milan, the prevalence of hypoalbuminemia, its association with the severity of COVID-19, with the levels of C-reactive protein, d-dimer and interleukin-6 and with clinical outcome over a follow-up period of 30 days. Urinalysis was evaluated in a subgroup of patients. **RESULTS** Serum albumin levels < 30 g/L were found in 105/207 (50.7%) patients at hospital admission. Overall, the median albumin value was 29.5 g/L (IQR 25-32.8). A negative association was found between albumin levels and severity of COVID-19 ($p < 0.0001$) and death ($p = 0.003$). An inverse correlation was observed between albumin and both C-reactive protein and D-dimer at hospital admission ($r = -0.487$ and $r = -0.479$, respectively; $p < 0.0001$). Finally, a positive correlation was found between albumin levels and eGFR ($r = 0.137$; $p = 0.049$). Proteinuria was observed in 75% of patients with available data and it did not differ between patients with hypoalbuminemia and those with albumin > 30 g/L (81% and 67%, respectively; $p = 0.09$). **CONCLUSION** In patients with COVID-19 hypoalbuminemia is common and observed in quite an early stage of pulmonary disease. It is strictly associated with inflammation markers and clinical outcome. The common finding of proteinuria, even in the absence of creatinine increase, indicates protein loss as a possible biomarker of local and systemic inflammation worthwhile to evaluate disease severity in COVID-19.

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Figure 1

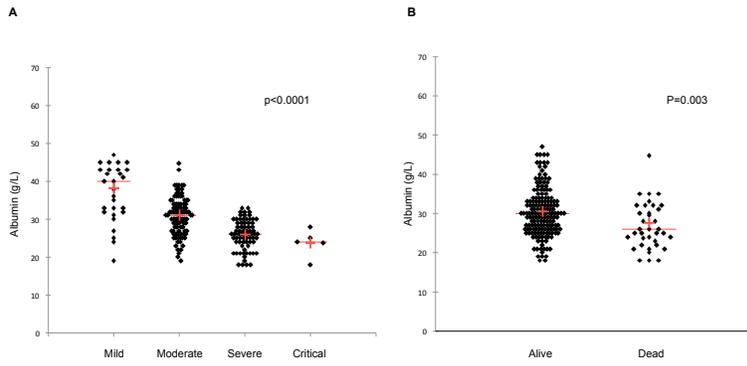


Figure 2

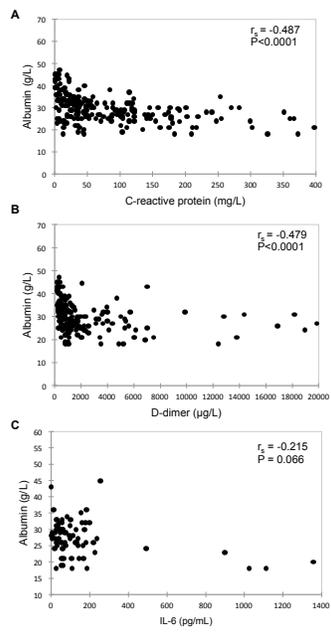


Figure 3

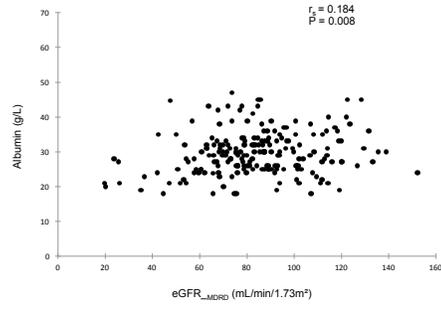


Figure 4

