Association between baseline serum albumin and mortality in 310 admitted patients with COVID-19

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Background

Coronavirus disease 2019 (COVID-19) has led to significant morbidity and mortality worldwide. The identification of readily accessible and reliable markers of disease outcomes is crucial to effective management. Deranged liver blood tests (LBTs) have been reported with severe disease, and in >50% of patients dying or requiring ICU admission. We aimed to examine LBTs in a cohort of admitted patients with COVID-19, and to investigate for an association with clinical outcome.

Methods

- Demographics, biochemistry and clinical outcomes were reviewed in COVID-19 Postive patients admitted to Beaumont Hospital.
- Data was analysed using Stata statistical software.

Results

- 310 admitted patients who were diagnosed with COVID19 were included. Of these, 96.5% were caucasian, 39.4% were female, mean age was 69.5(+/-15) years, and mean BMI was 27(+/-6.7) kg/m2. 83/310 (26.7%) patients died during the admission.
- With regards to LBTs on admission, albumin was <35g/L in 23%, ALT >40IU/L in 20%, AST >40IU/L in 28%, bilirubin >20umol/L in 5.2%, alkaline phosphatase >130IU/L in 17.4%, and gGT >40IU/L in 48.4%.
- Basline albumin, alkaline phosphatase, and bilirubin were significantly different in survivors vs. non-survivors (p<0.05).
- Multivariate regression analysis showed a significant association between mortality and serum albumin (OR 0.90, 0.85-0.96; p=0.002) along with age, gender, and MULBSTA score (an indicator of viral pneumonia severity); other LBTs were not associated.
- ROC analysis incorporating older age, male sex, high mulbsta score, BMI and hypoalbuminemia predicted death with area under curve ROC at 0.8

Liver Blood Tests on Admission	COVID-19 Patients
Bilirubin >20umol/L	5.2% (18/310)
ALT >40IU/L	20% (62/310)
AST >40IU/L	28% (87/310)
Alkaline phosphatase >130IU/L	17.4% (54/310)
Gamma GT >40IU/L	48.4% (150/310)
Albumin <35g/L	23% (71/310)

Area under ROC curve = 0.8049

Discussion

- In this study, abnormal liver blood tests were common on admission in patients with COVID19.
- Serum albumin was independently associated with mortality.
- Research into the underlying mechanisms and potential therapeutic targets are warranted.