Value of thiol and ischemia modified albumin (IMA) in predicting mortality in serious COVID-19 pneumonia

Tarik Acar , Birsen Ertekin , Mehmet Yortanli

ABSTRACT

Background/aim:

Viral infections of the respiratory tract are generally related to many factors such as excessive production of cytokines, inflammation, cellular death, redox imbalance or oxidative stress. The aim of this study was to determine the serum levels of thiol and IMA in patients with severe COVID-19 pneumonia to evaluate oxidative stress.

Study design:

This was a prospective, sectional cohort study conducted at a pandemics hospital between 01.01.2022 and 01.02.2022.

Methods:

A total of 153 patients who had been confirmed with severe COVID-19 pneumonia in the emergency unit were prospectively analyzed. The control group was formed by 50 healthy volunteers with similar age and no chronic disease history. Thiol and IMA levels were statistically compared both in the patient and the control groups, and within the patient groups (survived and non-survival).

Results:

While 96 out of 153 patients had survived, 57 patients had non-survival. There was a statistically significant distinction between the survived and non-survival patients with regard to Thiol and IMA levels ($p < 0.001$). The thiol levels in the patient group were significantly lower compared to the control group, and the IMA levels were significantly higher ($p < 0.001$). The sensitivity, specificity and NPV were 70.2%, 86.5% and 83% when thiol cut-off value was ≤345.2 µmol/L (AUC: 0.886, $p < 0.001$). The sensitivity, specificity and NPV were 70.2%, 85.4% and 82.8% when the IMA cut-off was >302.9 ABSU (AUC: 0.875, $p < 0.001$).

Conclusions:

Our results demonstrate that thiol and IMA levels may be used as bioindicators for risk classification and mortality in patients with serious COVID-19 pneumonia.