

**Investigating the predicting power of liver and kidney findings at hospitalization in patients with covid-19 in Ardabil Imam Khomeini Hospital from October to December 2021**

**Abstract**

**Background:** According to previous studies, the increase of liver and kidney enzymes in severe covid-19 disease is more than in normal and melaleum cases. Identification of biomarkers associated with disease severity may facilitate early aggressive treatment, reduce mortality, and improve hospital resource allocation. Therefore, the aim of this study is to investigate the relationship between liver and kidney enzymes and the mortality of covid-19 patients using survival analysis with the survival random forest model.

**Objective:** determine the relationship between liver and kidney findings at the beginning of hospitalization on the survival of patients diagnosed with covid-19

**Materials and methods:** Statistical population includes 750 available patients who were admitted to Imam Khomeini Hospital in Ardabil in the third quarter of 1400 due to the infection of Covid-19. All information related to patients, such as demographic information (including age, sex, medical history) and laboratory findings of patients (WBC), liver tests including AST, ALT, ALP and kidney tests including Cr, Urea were extracted from the patients' files. And it was recorded in the questionnaire designed for each patient. Survival random forest method was used to investigate the influencing variables in patient mortality.

**Results:** The average age of the patients was 58.3 years with a standard deviation of 18 years. 56.6% were women. The average length of hospitalization for deceased persons was 5 days and for surviving persons was 4 days. In this study, patients were analyzed separately into four groups: people over 65 years old, people under 65 years old and gender. In

all four groups, creatinine, urea, INR, PT, ALT variables were identified as important and effective variables in predicting the mortality of corona patients. The prediction error in this study for different groups was less than 23%, which is a good value.

**Conclusion:** Based on the results of our study, liver and kidney enzymes, especially AST, ALT, PT, urea, and long-term INR values are useful in predicting the risk and mortality of COVID-19.

**Key words:** Covid-19, random survival forest, liver enzymes, kidney enzymes, Ardabil.