

Evaluation of arterial blood gas (ABG) in COVID-19 patients admitted to intensive care units in Ardabil Imam Khomeini Hospital from April to September 2021

Abstract

Background: Considering that the mortality rate is high in Covid-19 patients, especially those hospitalized in the intensive care unit, and various factors are involved in its occurrence, therefore, it seems that the examination of arterial blood gases at the beginning of hospitalization of patients and also Serial evaluations can be effective in the management and treatment of the aforementioned patients.

Aim: The Aim of the study was to investigate the parameters of arterial blood gas in patients with Covid-19 hospitalized in the ICU department of Imam Khomeini Hospital, Ardabil.

Materials and methods: Our study population included patients who were diagnosed with Covid-19 from April 2021 to September 2021 in the Intensive Care Units of Imam Khomeini Hospital in Ardabil. For all subjects, a checklist including demographic characteristics, clinical findings, and laboratory findings was completed. All the information included in the study, such as demographic information (including age, gender, history of illness, history of drug use, etc.), clinical information of patients (symptoms of illness, recovery or death, etc.) and laboratory findings (including CRP, BUN, Cr, ferretin, WBC, Hb, hematocrit, etc.) were extracted from the patient records and recorded in a checklist designed for each patient. Also, information on arterial blood gases in terms of acid and base changes in patients was obtained and entered in the mentioned checklist.

Results: A total of 197 patients who were diagnosed with Covid-19 from April 2021 to September 2021 in the ICU departments of Imam Khomeini Hospital in Ardabil were included in the study. 85 patients (43.1%) were male and 112 patients (56.9%) were female. The mean pH of the patients was 7.25 ± 0.28 , the mean PO₂ of the patients was 76.14 ± 13.89 , the mean PCO₂ of the patients was 40.08 ± 5.95 , and the mean HCO₃ of the patients was 25.30 ± 5.01 . The ABG values of the patients were analyzed according to gender and results showed that, none of the ABG parameters were significantly different between men and women. The ABG values of the patients were examined based on the outcome of the disease and according to the results of the analysis, none of the ABG parameters were significantly different in the outcomes of survival and death. Based on ABG parameters, patients were

divided into 5 groups of metabolic acidosis, metabolic alkalosis, respiratory acidosis, respiratory alkalosis and no disorder (normal) based on the type of main acid-base disorder. 29 cases (12.9%) had metabolic acidosis, 31 cases (13.8%) had metabolic alkalosis, 84 cases (37.5%) had respiratory acidosis, 41 cases (18.3%) had respiratory alkalosis, and 12 patients had disorders Acid-base were normal.

Conclusion: Patients who were hospitalized due to symptoms of COVID-19 had a high rate of acid-base disorders. They experienced a variety of acid-base changes. Respiratory acidosis and respiratory alkalosis were the most common acid-base disorders in this group of patients.

Key words: Covid-19, acid-base disorders, respiratory acidosis