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The Relationship Between Lactate Level and Length of Hospital Stay in COPD Exacerbation

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Objectives: Lactate is used as a biomarker in many critical situations. The aim of our study was to investigate the effect of lactate level on the length of hospitalization in patients with chronic obstructive pulmonary disease (COPD) exacerbation.

Methods: 130 patients, hospitalized between October 2017 and December 2018 due to COPD exacerbation were evaluated. In addition to exacerbation, 29 patients with infection such as pneumonia, etc., acute or chronic renal failure that can affect lactate levels, liver failure, known malignancy, Metformin-like drug use, or a history of trauma were excluded from the study. The arterial blood gas parameters and lactate levels of the patients were examined. The patients were divided into two groups as; longer than 7 days and less than 7 days, depending on the length of stay. The relationship between lactate level and length of stay was investigated. Data were analyzed with SPSS 17.0.

Results: A total of 101 patients were included in the study, 28 (27.72%) of which were female and 73 (72.28%) were male. The mean age of the patients was 68.4 ± 9.10 years. 57 (56.44%) patients were hospitalized for 7 days or less and 44 patients (43.56%) were hospitalized for more than 7 days. The mean length of hospital stay was 7.37 ± 2.24 days. Demographic characteristics. There was a significant correlation between lactate levels and lengths of hospitalization. ($p < 0.001$; $r = 0.791$). When patients are divided into two groups according to the length of hospital stay, lactate values of patients staying more than 7 days (2.74 ± 0.74) were found to be higher than patients staying 7 days and less (1.50 ± 0.58) ($p < 0.001$). The mean weight and BMI values of patients hospitalized for more than 7 days were found to be lower than those with 7 days and less ($p < 0.001$; $p < 0.001$). Lactate value of patients in need of non-invasive mechanical ventilation was found to be higher (2.29 ± 0.91) than the other patients (1.70 ± 0.76) ($p = 0.001$). A determinative cut-off point was examined for the lactate level in hospitalizations of patients. When lactate was taken as 1.95 90.91% sensitivity and 84.21% specificity was obtained.

Conclusion: Patients, hospitalized due to chronic obstructive pulmonary disease exacerbation with high lactate levels, were observed to have a longer duration of hospitalization. In clinical practice, the lactate level can be used as a biomarker in patients hospitalized due to COPD exacerbation.

Keywords: Lactate, length of stay, chronic obstructive pulmonary disease exacerbation, non-invasive mechanical ventilation