

Effect of Pulmonary Rehabilitation towards Length of Stay and IL-6 Level on Community-Acquired Pneumonia Patients

Authors : Santony Santony, Teguh Rahayu Sartono, Iin Noor Chozin

Abstract : Introduction: Pneumonia is acute inflammation on lung parenchyma which is caused by bacteria, virus, fungi, or parasite. In Indonesia, Pneumonia is among the ten inpatient cases. Length of stay is related to the increased morbidity rate, nosocomial infection, and costs. The aim of this study is to assess the effect of pulmonary rehabilitation on the difference in length of stay and the level of Interleukin 6 (IL-6) as an inflammation biomarker for community-acquired pneumonia (CAP) patients in non-intensive rooms. Therefore, pulmonary rehabilitation as adjunctive therapy can be routinely exercised in order to shorten the length of stay, along with the decrease in IL-6 level. Methods: This study was conducted from May to October 2019 at Saiful Anwar General Hospital, Malang. 40 community-acquired pneumonia patients in non-intensive rooms were divided into two groups. 20 patients in the treatment group and 20 patients in the control group, all of them were selected through both inclusion and exclusion criteria. This study used simple consecutive random sampling. In the treatment group, pulmonary rehabilitation performed was composed of breathing exercise, effective coughing technique, clapping (percussion), postural drainage, as well as respiratory muscle training using incentive spirometry device. Pulmonary rehabilitation was conducted twice over five days with a minimum duration of 15 minutes. Blood samples were taken both on the first and the fifth day of the treatment to measure IL-6 level as an inflammation biomarker. Result: For the treatment group, the length of stay was 5.35 days whereas the control group 7.6 days. It can be seen that the treatment group had a shorter length of stay by 2.25 days ($P < 0,001$). The IL-6 level on the first day for the treatment group was 36.27 pg/ml, whereas on the fifth day was 34.36 pg/ml. There was a decrease in IL-6 level on the fifth day of treatment even though it was not statistically significant ($P = 0.628$). IL-6 level on the control group for the first day was 67.76 pg/ml, and after the fifth day, the level decreased to 54.43 pg/ml. There seemed to be a decrease in the IL-6, but it was not statistically significant ($P = 0.502$). On the fifth day, the treatment group showed an average IL-6 level of 34.36 pg/ml. This value was lower than that of the control group which did not receive pulmonary rehabilitation having an IL-6 level of 54.43 pg/ml, even though it was not statistically significant ($p = 0.221$). Conclusion: This study concluded that pulmonary rehabilitation as an adjunctive therapy shortened length of stay by 2.25 days for community-acquired pneumonia patients in a non-intensive room. Both groups experienced a decrease in IL-6 level on the fifth day in comparison with the first day even though it was not statistically significant $P > 0,05$. IL-6 level as an inflammation biomarker decreased on the fifth day of treatment which was in accordance with improvement on pneumonia patients.

Keywords : community-acquired pneumonia, interleukin-6, length of stay, pulmonary rehabilitation

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