Evaluation of sleep quality index,risk of respiratory failure and obstructive sleep apnea in patients with chronic obstructive pulmonary diseases referred to pulmonary clinics of imam khomeini hospital from winter 2020 to winter 2021

Abstract

Background: Sleep disorders and breathing problems during sleep cause a decrease in the quality of life and lead to many problems during the day for patients with COPD and prevent them from performing the normal roles of life. So it is necessary to evaluate the quality of sleep and the prevalence of sleep apnea in these patients and take them into consideration in the process of routine therapeutic and nursing care.

Aim: To evaluate the sleep quality index, risk of respiratory failure and obstructive sleep apnea in patients with chronic obstructive pulmonary diseases referred to pulmonary clinics of imam khomeini hospital from winter 2020 to winter 2021.

Materials and methods: In this cross-sectional study, 139 COPD patients were included. The required information was collected based on a 4-part questionnaire. The first part was related to demographic and basic information such as age, sex, education, smoking status, body mass index, disease duration, and disease severity. The second part includes the Pittsburgh Sleep Quality Questionnaire (PSQI) to evaluate sleep quality; The third part included the Epworth sleepiness questionnaire (ESS) to assess daytime sleepiness, and the fourth part included the STOP-BANG questionnaire to assess the risk of sleep apnea. The frequency of obstructive sleep apnea was determined using the AHI index (the ratio of the total number of apneas during sleep to hours of sleep).

Results: The mean age of the patients was 55.3±15.4 and 73 patients (52.5%) were male and 66 patients (47.5%) were female. A significant positive correlation was seen between AHI and PSQI ($P<0.001$), ESS ($P=0.006$), and STOP-BANG ($P<0.001$). AHI was also related to smoking rate ($P=0.007$), high blood pressure ($P=0.012$), disease duration ($P<0.001$), and disease severity ($P<0.001$). Based on ROC curve analysis, the area under the curve of PSQI, ESS, and STOP-BANG for

predicting sleep apnea was 0.72 (95% C.I.: 0.62-0.82, P<0.001), 0.66 (95% C.I.: 0.54-0.77, P=0.004), and 0.79 (95% C.I.: 0.71-0.87, P<0.001), respectively.

Conclusion: The results of the present study showed that obstructive sleep apnea, significant sleep disturbance, and daytime sleepiness have a high frequency in COPD patients; STOP-BANG questionnaire has a better performance compared to PSQI and ESS questionnaires in predicting obstructive sleep apnea in COPD patients; Obstructive sleep apnea in COPD patients has a direct and significant relationship with the duration and severity of the disease, high blood pressure, and the amount of smoking, but it is not related to age, body mass index, and neck size.

Keywords: Chronic obstructive pulmonary disease, Sleep disorder, Apnea