CHARACTERISTIC OF SLEEP APNEA SYNDROME IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY ILLNESS

[1]Radjabova G, [2]Nazarova J, [3]Rakhmatova S, [4]Ubaydullaeva N
Tashkent Institute for Advanced Training of Doctors, Bukhara State Medical Institute

---

ABSTRACT

Clinical-instrumental and polysomnographic examination were performed in 65 patients with chronic cerebral ischemia on the background of venous cerebral dysfunction with concomitant pathology - chronic obstructive pulmonary disease. 27 (37.5%) of the examined patients had clinical manifestations of obstructive sleep apnea / hypopnea syndrome: mild - in 10, moderate - in 20, severe - in 8. A significant correlation was shown between body mass index, the number of episodes of apnea and the level of saturation of blood hemoglobin with oxygen, symptoms of venous cerebral dysfunction. It should be assumed that in the pathogenesis of obstructive apnea / hypopnea syndrome in chronic obstructive pulmonary disease, the degree of obesity and venous cerebral dysfunction are more important than the severity of lower airway obstruction.

Key words: obstructive sleep apnea / hypopnea syndrome, polysomnography, venous cerebral dysfunction.

INTRODUCTION

Venous cerebral dyscirculation (VCD) often occurs with congestion in the superior vena cava system, right ventricular failure, circulatory disorders in the pulmonary circulation. Moreover, in this category of patients, along with hemodynamic factors in the development of this pathology, individual neuro-reflex mechanisms and primary pathological conditions are of great importance, leading to the development of discirculation in the venous system of the brain.

In patients with VCD against the background of chronic obstructive pulmonary disease (COPD), obstructive sleep apneasyndrome (OSAS) significantly aggravates the course of the underlying disease, increases hypoxemia, promotes the development of secondary erythrocytosis, pulmonary hypertension and the formation of chronic cor pulmonale with right ventricular failure [3, 9, 10].

The prevalence of OSAS among the entire population over 35 years old is 5–7%. These indicators are comparable to the prevalence of bronchial asthma. About 1–2% of this group of people suffer from severe forms of the syndrome. Among people over 60 years of age, the frequency of OSAS increases noticablely and is about 35% in men and about 25% in women. In people over 60 years of age, the incidence of this syndrome can reach 10% [1].

The combination of COPD and OSAS - overlap syndrome - is a state of mutual burdening. The prevalence of overlapping syndrome among people with COPD is estimated at 2%, and among patients with OSAS - at 10%. In this regard, patients with COPD with suspected OSAS should undergo polysomnography and, if necessary, prescribe appropriate treatment. In this regard, patients with COPD with suspected OSAS should undergo polysomnography and, if necessary, prescribe appropriate treatment.

Polysomnography is a synchronous registration of an electroencephalogram, electrooculogram (movement of the eyeballs), chin electromyogram, air flow at the level of the mouth and nose, respiratory movements of the abdomen and chest, oxygen saturation of hemoglobin in blood, electrocardiogram and motor activity of the legs [6]. This is the main method for studying obstructive sleep apnea syndrome.

There is no effective drug therapy for OSAS. Surgical interventions (uvulopalatopharyngoplasty, septoplasty) are difficult for patients and do not guarantee a cure. [6].

The method of choice in the treatment of this syndrome for more than 35 years has been the creation of continuous positive pressure in the upper airways, which prevents their obstruction and maintains sufficient patency - CPAP therapy (Continuous Positive Airway Pressure) [8].

THE AIM OF THIS STUDY

To analyze the frequency and severity of OSAS in patients with venous cerebral insufficiency against the background of chronic obstructive pulmonary disease and the level of oxygen saturation of hemoglobin in the blood at the time of an attack of sleep apnea.

MATERIAL AND METHODS

We examined 65 patients with COPD between 45and 70 years old (40 men and 25 women). The average age of men was 56.5 years, women - 57.5 years. Criteria for inclusion in the study: age over 40 years, the presence of post-dilatation parameters of the function of external respiration and clinical manifestations of respiratory disorders during sleep (snoring, daytime sleepiness, respiratory arrest during sleep).

Polysomnographic examination was carried out at the Research Institute of Endocrinology on Embla S7000 equipment from Medcare, version 4.0 (copyright belongs to Medcare Flaga, USA). The selection of CPAP therapy was carried out using the S8 AutoSet Spirit II system from ResMed (Australia). Statistical processing of the data obtained was carried out using nonparametric and parametric criteria.

RESEARCH RESULTS

OSAS was confirmed in 21 patients (37.5%), in 11 cases only the syndrome of nocturnal snoring was recorded without stopping breathing and a drop in the level of hemoglobin oxygen saturation. Among patients with only snoring without apnea, middle stage COPD was detected in 8, severe - in 3 cases; category B - in 8, category C - in 2, category D - in 1 patient. The average forced expiratory volume in 1 second here was 51.3 ± 8.2% of the required value, concomitant cardiovascular diseases were present in 6 people,BMI averaged 26.1 ± 2.9 kg/m^2.

Apnea - 46.2 ± 6.7, obstructive hypopnea - 91.4 ± 9.8, central apnea - 2.8 ± 0.5. The average duration of obstructive apnea was 41.5 ± 6.3 s, the average minimum saturation of blood hemoglobin with oxygen was 80.2 ± 9.8%, and the average saturation was 91.4 ± 8.6%. COPD of the middle stage was detected in 5, severe - in 9 patients; category B - in 3, category C - in 5, category D - in 3 patients. The average forced expiratory volume in the 1st was 43.2 ± 9.2% of the required value. Concomitant cardiovascular diseases were present in 7 people. Cerebral venous encephalopathy symptoms were observed in this group in 72.7% of cases. The average BMI was 33.4 ± 4.1 kg / m2 (class I obesity - in 5 people, class II obesity - in 4, class III obesity - in 4 people).

OSAS of severe degree was recorded in 7 people (including 5 men): the average number of respiratory disorders per night was 415.0 ± 31.5, of which obstructive apnea - 270.6 ± 24.5, obstructive hypopnea - 134, 0 ± 13.7, central apnea - 10.4 ± 1.8. The average duration of obstructive apnea was 58.9 ± 8.9, the average minimum saturation of blood hemoglobin with oxygen was 66.9 ± 5.6%, the average saturation was 87.0 ± 10.4% (the minimum saturation level was 50%) ... COPD of severe degree was determined in all patients of this group; category B was not registered, category C was determined - in 3, category D - in 4 patients. The average forced expiratory volume in the 1st s was 39.2 ± 6.9% of the required value. All patients had concomitant cardiovascular diseases. In this group, all patients had venous encephalopathy. The average BMI was 41.84 ± 6.2 kg/m^2, and all patients were obese (class II - in 7 people) (Table 1).

Considering the severity of OSAS and concomitant pathology, CPAP therapy was recommended to 9 patients (42.85%), consultation with an ENT doctor - 11 patients and weight loss - 15 patients. CPAP therapy was selected in 9 cases, 11 people refused it due to the high cost of treatment. During therapy, 6 patients showed a decrease in the apnea / hypopnea index to 5 per hour, which corresponded to the norm. In 1 patient, this index decreased to 9 per hour, which corresponded to the mild severity of OSAS (selection of two-level PAP therapy is recommended).

It was found that signs of cerebral venous dysgemia and obesity were significantly more frequent in the group of patients with moderate and severe OSAS compared with the group of patients where SAOS was not detected.

There was no significant difference in the average values of forced expiratory volume for 1 second with different severity of OSAS and a significant correlation between this indicator and the frequency of apnea. However, similar comparisons with BMI values showed a significant direct correlation with the severity of OSAS, as well as a significant correlation between BMI and the amount of apnea ($r = 0.7$) and the level of hemoglobin oxygen saturation ($r = –0.6$). Apparently, in the occurrence of OSAS, the degree of obesity is pathogenetically more important than the degree of obstruction of the lower airways. The high incidence of OSAS in overweight patients with COPD is probably a feature of the so-called obesity COPD phenotype.

CONCLUSION

It can be concluded that OSAS is one of the important mechanisms that aggravate the course of COPD, especially in overweight individuals, and requires mandatory correction of the patency of the upper airways using CPAP therapy. People with OSAS are also characterized by the formation of venous cerebral dysgemia, which significantly aggravates the course of the underlying disease, increases hypoxemia. To avoid neurological symptoms in patients with COPD, in particular in patients with SAOS, it is necessary to prescribe a course of venotonic drugs.

REFERENCES

1. Buzunov R.V., Eroshina V.A., Legeida I.V. Snoring and Obstructive Sleep Apnea Syndrome: A Study Guide for Physicians. M., 2007.
2. Kopanakis A, Mermigkis C, Foldvary-Schaefer N, et al. Health-related quality of life in patients with obstructive sleep apnoea and chronic obstructive pulmonary disease (overlap syndrome). International Journal of Clinical Practice 2007; 61(2): 207-11.
3. Weitzenblum E, Chaouat A, Kessler R, et al. The Overlap Syndrome: association of COPD and Obstructive Sleep Apnoea. Rev Mal Respir 2010; 27(4): 320-40.
4. Weitzenblum E, Chaouat A, et al. Overlap Syndrome: Obstructive Sleep Apnea in Patients with Chronic Obstructive Pulmonary Disease Proceedings of the american thoracic society2008; 5: 237-41.
5. Rutherford A, Bradley TD, Lue F, et al. Role of diffuse airway obstruction in the hypercapnia of obstructive apnea. Am Rev Respir Dis 1986; 134: 920-4.
6. Skrickova J, Turcani P, Pavlik T, et al. The prevalence of obstructive sleep apnea in patients hospitalized for COPD exacerbation. Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub 2014: 158.

7. Tomas G Neilan, Bhavneesh Sharma, Raymond Y Kwong. Evaluation of Right Ventricular emodeling Using Cardiac Magnetic Resonance Imaging in Co-Existent Chronic Obstructive Pulmonary Disease and Obstructive Sleep Apne. NIH Public 2013: 4.
8. Masanori Azuma, Kazuo Chin, Chikara Yoshimura, et al. Associations among Chronic Obstructive Pulmonary Disease and Sleep Disordered Breathing in an Urban Male Working Population in Japan. Respiration 2014; 88: 234-43.
9. Lo YL, Wang TY, Lee KY, et al. Nocturnal CPAP improves walking capacity in COPD patients with obstructive sleep apnoea. Respiratory Research 2013; 14: 66.
10. Sy Duong Quy. Étude des caractéristiques du syndrome d'apnées obstructives chez les patients atteints de BPCO. J Fran Viet Pneu 2013; 4(11): 1-52.
11. Miralles C LR, Herrejon A, et al. Prevalence Of Obstructive Sleep Apnea Syndrome (OSA) In Patients With Stable Hypercapnic Chronic Obstructive Pulmonary Disease (COPD). Pulmonary and non pumonary sleep disorders 2013; A64: A2059-A.
12. Guglielmo M CC, Ferrero C, et al. Nocturnal and exercise oxygen desaturation in COPD patients with and without OSAS. European Respiratory Journal 2013; 42