DIAGNOSIS OF NASAL BREATHING USING A RHINOMANOMETER IN PATIENTS WITH OSA PRESCRIBED CONSERVATIVE TREATMENT WITH INTRAORAL DEVICES

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ABSTRACT

In recent years, diagnostics in the field of medicine has developed at an extremely rapid pace, thanks to the use and improvement of new medical devices and devices. The problem of timely and adequate diagnosis and treatment of the syndrome of obstructive sleep apnea (OSA) and snoring is particularly relevant worldwide. The disease has been proven to worsen the patients' quality of life, and may even threaten it. Obstructive sleep apnea and snoring syndrome (OSAS) is a widespread disease of social importance in which there is a reduction or cessation of airflow through the nose/mouth during sleep due to upper airway collapse. Obstructive sleep apnea affects the cardiovascular, endocrine, neurocognitive and other systems of the body. There are symptoms of loud snoring, choking, hypoxemia, and micro-awakenings, leading to sleep fragmentation, daytime fatigue, and sleepiness. The latter greatly worsens the quality of life of patients. There are real risks to the life and health of the patient and others, given the possibility of falling asleep at the wheel in drivers with sleep apnea and participation in traffic accidents. To diagnose the syndrome, a polysomnographic study is performed, which is still the gold standard. For a better diagnosis, it is recommended to combine it with rhinomanometry. Treatment of OSA includes control of risk factors and removal of obstructive factors that make breathing difficult. Severe OSA syndrome is treated with continuous positive pressure ventilation (CPAP) during sleep, possibly in combination with intraoral devices. Rhinomanometry can also be used to monitor the effectiveness of CPAP therapy in severe forms of the syndrome by determining tissue resistance. The impact on patients with a milder form of OSA treated with intraoral devices is also monitored. The method can also be used in patients with allergic rhinitis, sinusitis of rhinogenic and other origin, and patients with orthodontic deformities. The correct choice of intraoral appliances for conservative treatment of OSA and timely diagnosis are key to successful treatment.

Keywords: *obstructive sleep apnea, rhinomanometry, intraoral devices*

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INTRODUCTION

In recent years, diagnostics in the field of medicine has developed at an extremely fast pace, thanks to the use and improvement of new medical devices. The problem of timely and adequate diagnosis and treatment of the syndrome of obstructive sleep apnea (OSA) and snoring is particularly relevant worldwide. The disease has been proven to worsen the patients' quality of life, and may even threaten

it. Numerous studies have reported an association between nasal obstruction and obstructive sleep apnea and snoring syndrome (OSAS) (1,2).

AIM

The aim of the present study was to investigate the role of timely diagnosis of nasal breathing using a rhinomanometer in patients with OSA prescribed conservative treatment with intraoral devices.

MATERIALS AND METHODS

For the period April 2022–August 2022, in the available database (PubMed, BioMed Central, ScienceDirect, Scopus, Web of Science, Embase), a systematic analysis of scientific publications conducted. The included articles investigated the role of timely diagnosis of nasal breathing using a rhinomanometer in patients with OSA prescribed conservative treatment with intraoral devices.

RESULTS

Obstructive sleep apnea and snoring syndrome is a widespread disease of social importance in which there is a reduction or cessation of airflow through the nose/mouth during sleep due to upper airway collapse. Obstructive sleep apnea affects the cardiovascular, endocrine, neurocognitive and other systems of the body. There are symptoms of loud snoring, choking, hypoxemia, and micro-awakenings, leading to sleep fragmentation, daytime fatigue, and sleepiness. The latter greatly worsens the quality of life of patients. There are real risks to the life and health of the patient and others, given the possibility of falling asleep at the wheel in drivers with sleep apnea and participation in traffic accidents. To diagnose the syndrome, a polysomnographic study is performed, which is still the gold standard. For a better diagnosis, it is recommended to combine it with rhinomanometry.

Especially important for patients is the offer of multidisciplinarity in making the diagnosis and preparing a treatment plan for the disease. Early detection of the resistance of the upper airways by means of a rhinomanometry test can delay and prevent the development of the OSA syndrome and snoring (3). In this way, the development of diseases of the cardiovascular, liver, nervous, cognitive, endocrine, and other systems of the human body is prevented. It is important to emphasize the effects of allergic conditions on the nasal mucosa, as well as the long-term use of nasal decongestants.

Given the fact that the world is experiencing one of the worst pandemics in its history and the importance of the maximum accumulation of knowledge about the impact of the COVID-19 virus on the human organism, the study of its impact on the mucous membrane of the nose and paranasal cavities is of particular importance.

Treatment of OSA includes control of risk factors and removal of obstructive factors that make breathing difficult. Severe OSA syndrome is treated with continuous positive pressure ventilation (CPAP) during sleep, possibly in combination with intraoral devices (4). Rhinomanometry should be included in the treatment algorithm for patients with OSA (5,6). Rhinomanometry can also be used to monitor the effectiveness of CPAP therapy in severe forms of the syndrome by determining tissue resistance. Rhinomanometry was used to assess the degree of nasal resistance. Nasal resistance is measured in a sitting and supine position at different pressures (5,7). The impact on patients with a milder form of OSA treated with intraoral devices is also monitored. The method can also be used in patients with allergic rhinitis, sinusitis of rhinogenic and other origin, and patients with orthodontic deformities.

CONCLUSION

From the conducted research, we have reached the conclusion that rhinomanometry is a valuable and effective functional method for additional diagnosis and follow-up of patients with OSA, allergic rhinitis, sinusitis of rhinogenic and other origin, orthodontic deformities, follow-up of patients after passing through COVID-19 infection and other diseases. The effectiveness of already prescribed therapy is monitored. Prevention of the deepening processes OSA is possible, as well as prevention of the effects of COVID-19 on the upper respiratory system. The participation of speech therapists in the prevention of ear-nose-throat and orthodontic disorders is important. The correct choice of intraoral appliances for conservative treatment of OSA and timely diagnosis are key to successful treatment.

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