

INVESTIGATION OF OLFACTORY FUNCTION IN PATIENTS WITH CORONAVIRUS INFECTION COVID-19

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Introduction. The novel coronavirus (2019-nCoV, or COVID-19) epidemic first broke out in Wuhan and has been spreading in whole China and the world [1, 2]. The most common clinical presentation of severe COVID-19 is acute respiratory failure consistent with the acute respiratory distress syndrome. Airway, lung parenchymal, pulmonary vascular, and respiratory neuromuscular disorders all feature in COVID-19. However, patients with COVID-19 come to otorhinolaryngologist with ENT related symptoms associated with functional changes in the ENT organs and upper respiratory tract as the early and primary manifestations of the disease.

Research objectives. The aim of this study was to evaluate olfactory function in patients with confirmed COVID-19.

Material and methods. Ethical approval for this study was obtained by VSMU (protocol No. 7 dated 02.12.2020). The study included 188 subjects (121 women and 67 men, range = 23 to 92 years, mean age = 53.5 years) with confirmed COVID-19. All patients underwent chemosensory (smell) testing – olfactometry test. The duration of the observation period was 2 months (from 02.12.2020 to 25.01.2021). The inclusion criteria were confirmed COVID-19 (positive SARS-CoV-2 RNA, chest CT scan showing bilateral multilobar ground-glass opacities with a peripheral, asymmetric, and posterior distribution, the ELISA test detected IgM-positive); signed informed consent of the study. The exclusion criterion was refusal to participate in the study. All patients underwent olfactometry test. The duration of the observation period was 2 months. The degree of reduction in the sense of smell was assessed by using a visual analogue scale (VAS), which may be used to assess both local subjective symptoms and the general condition of patients.

Results. Smell impairment was found in 162 (87%) patients with confirmed COVID-19. In the group of patients with smell impairment 141 (87%) patients had a taste disorder. In the group of patients with taste impairment 141 (97%) patients had impaired sense of smell approved by chemosensory (smell) testing. Recovery of smell during the first week had 20 (11%) patients, during the first two weeks had 29 (15%) patients. Reassessment of olfactory function was carried out in 2 months after the onset of the disease. Analyzing the results showed that 98% patients improved or recovered their sense of smell and only 2% indicated that anosmia continued. Objective olfactometry test showed that the sense of smell was fully recovered in

83% of patients, not completely in 9% of patients, a decrease smell acuity of was observed in 6% of patients, the sense of smell was not restored in 2% of patients. The study also analyzed the mean time period taken to recover the olfactory function. The following time periods were selected: 1-7 days, 8-14 days, 15-21 days, 22-28 days, 29-31 days, more than 31 days. 43% patients noted a significant improvement in overall olfactory function in the period of 1-7 days, 25% patients – in 8-14 days period, 11% patients in 15-21 days period, 2% patients – in 22-28 days period, 15% patients – in 29-31 days period, 2% patients – in more than 31 days. The data analysis showed that smell impairment was the earliest symptom associated with changes in the ENT organs in 28 (15%) patients with confirmed COVID-19. The data analysis also showed that smell impairment was the longest symptom associated with changes in the ENT organs in 21 (11%) patients with confirmed COVID-19. Objective olfactometry test showed smell impairment in 82 (44%) patients. In 30% of patients, smell impairment was detected in the absence of complaints about its change. The results demonstrated a significant smell impairment in overall olfactory function test score, three, in 36 (44%) patients, two – in 29 (35%) patients and one in 17 (21%) patients. The VAS value was analyzed in patients with confirmed coronavirus infection COVID-19. The average VAS in patients with loss of smell was 5.9 points. It is mentioned that when the VAS value is more than 5, there is a significant decrease in the quality of life. Therefore, the clinical manifestation of coronavirus infection in the form of smell impairment may be attributed to a condition that reduces the quality of life of patients.

The study showed that the treatments that have been most used for olfactory dysfunction were nasal spray "Aqua Maris", "Salin", "Rinolux", nasal lavage with 0.9% sodium chloride solution, furacilini solution; vitamins "Complivit", Zn, vitamin C per os that were used by 37% patients. 12% patients used smell training (sometimes called olfactory training). The following odorous substances were used: essential oils, vinegar 9%, ground coffee. 88% patients did not use the olfactory training technique since they did not know about this technique) in order to restore their sense of smell.

Conclusion. The leading manifestation of ENT pathology in patients with confirmed COVID-19 was smell impairment in 162 (87%) patients. According to the objective chemosensory (smell) testing the sense of smell was completely recovered in 83%, incompletely in 9%, a decrease smell acuity was observed in 6%, the sense of smell was not recovered in 2% patients within two months. To restore the olfactory function, drugs were used in 37% of patients. Olfactory training was used by 12% of patients. The accurate diagnosis of nasal olfactory function in the ENT practice should include chemosensory (smell) testing that is the available technique for objective measurement and is important in the aspect of early diagnosis of coronavirus infection. Prompt and accurate diagnosis allows appropriate management to be initiated.