

Post-COVID-19 symptoms: A case report and review

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Abstract

COVID-19 causes a number of symptoms associated with olfactory disorders and these clinical symptoms are widely reported in the current Literature. But more and more patients suffering from this disease turn to laryngologists with complaints of prolonged nasal obstruction in post-infection period. There is unclear connection between the nasal obstruction and the coronavirus disease 2019 (COVID-19). The study was performed in a clinic, among patients who had suffered from COVID-19 and which had complaints of nasal obstruction after recovery. The evaluation of the treatment results was carried out taking into account the anamnesis (subjective data) and the rhinoscopic picture (objective data). The case presentation is followed by a review of the potential causes and pathogenesis of nasal obstruction after COVID-19

KEYWORDS: COVID-19; nasal congestion; nasal breathing; chronic hyperotrophic rhinitis



Introduction

Coronavirus disease 2019 (COVID-19) was first detected in China in December, 2019, and declared as a pandemic by the World Health Organization (WHO) on March 11, 2020. [1]. The coronavirus disease 2019 (COVID-19) has become a serious pandemic. The reported symptoms of COVID-19 included cough (67.8%), fever (43.8%), increased sputum production (33.7%), sore throat (13.9%), and nasal congestion (4.8%) [2]. Some patients had only hyposmia and dysgeusia as their initial symptoms. Anosmia can occur alone or can be accompanied by other symptoms of COVID-19, such as a dry cough. Multiple cross-sectional studies have demonstrated that the incidence rate of olfactory dysfunction in COVID-19 patients varies from 33.9-68% with female dominance. [3]. In COVID-19 patients, the main manifestations were fever and cough and characterized by lymphocytopenia and ground-glass opacity changes on chest computed tomography [4]. Patients with severe infection can also develop neurological manifestations such as acute cerebrovascular diseases, skeletal muscle injury and impaired consciousness [5]. Besides, some patients may present with upper respiratory symptoms such as pharyngodynia, sore throat, nasal congestion, rhinorrhea and olfaction alterations [6, 7]. Olfactory dysfunction (OD), including anosmia and hyposmia, manifests itself particularly prominently among these symptoms in COVID-19 patients [8]. Covid 19 causes a number of symptoms, and all of these clinical symptoms are widely reported in the current literature.

In this article, we would like to consider the symptoms that are characteristic in pos-Covid period. The main complaint of most patients visiting laryngologists is similar to fatigue after severe acute respiratory syndrome (SARS). The most patients are turning to laryngologists with post-Covid-19 symptoms such as nasal congestion and difficulty in nasal breathing. The main complaints were lack of air and the resulting pain attack, general weakness, as well as frequent headaches. Hence, the aims of revue of cases to investigate and characterized the manifestations which appear after eradication of the coronavirus infection and its relation to disease severity.

Case Report

1. Patient Tamar G., 62 years old. In February 2020, she was diagnosed with Covid 19 (PSR test), the disease began with low-grade fever, loss of smell and taste (according to the patient's self-esteem), shortness of breath, general weakness. The disease was complicated by pneumonia,

the lung damage was estimated at 6-8 points. The patient was aware of the presence of COVID-19, which was confirmed by the PCR test. Adequate treatment was carried out, against which there was an improvement, the patient was discharged to an apartment, with the appropriate appointment and recommendations. After 2 months, the patient turned to the local doctor with respiratory complaints: shortness of breath, lack of air and connected with it the panic attack. The pneumatologist performed a complete examination of the respiratory and lung functions, as a result of which no changes were observed, and the patient was referred to the otorhinolaryngologist for further examination. Objective data: rhinoscopy – the nasal septum is slightly curved, both inferior turbinates are enlarged, the nasal passage is narrowed due to the hypertrophic of turbinates, the mucous membrane is light pink, the mucous membrane of the turbinates is more fermented. Oto-pharyngoscopy within normal limits. It is noteworthy that the patient had not previously complained of nasal congestion or any other rhinological symptoms (rhinorrhea, allergic rhinitis, etc.). The patient was diagnosed with turbinates hypertrophy and prescribed appropriate treatment (nasal corticosteroids (2-4 weeks) and montelukast with antihistamines for 20 days). The patients were reexamined 1 month later. There were no complaints about airlessness, nasal breathing was resumed, objectively – the inferior turbinates were moderately enlarged, the nasal passage was free.

2. Patient Anastasia F., 19 years old. In November 2020, she was diagnosed with Covid 19 (PCR COVID 19 – positive). He was treated on an outpatient basis, in self-isolation, under the supervision of a doctor. The disease was asymptomatic, with hyposmia (self-reported) for 3 days. After 2 weeks of self-isolation, the patient returned to a normal rhythm of life, but it was difficult for her to breathe through the nose, so she consulted an otolaryngologist. According to objective data: rhinoscopy – without curvature of the nasal septum, both inferior turbinates are enlarged, the mucous membrane is light pink. Oto-pharyngoscopy within normal limits. The patient is diagnosed with nasal turbinates hypertrophy. After taking topical corticosteroids for 2 weeks, breathing improved, the turbinates decreased in size, approached the norm, but the olfactory function did not recover.



Discussion

There can be many reasons for nasal breathing difficulties. Sometimes a stuffy nose without a runny nose does not look like a disease, but simply causes discomfort. This condition can really go away with a flu or a cold, if it was caused by these diseases. But completely different circumstances, if the congestion has arisen as a result of an allergic reaction or infectious processes have become chronic.

Rhinitis is defined as the presence of at least one of the following: nasal congestion, rhinorrhea, sneezing and itchy nose. There are two main classifications: allergic rhinitis and non-allergic rhinitis, a disease caused by an infection or allergy that causes nasal congestion [17].

Non-allergic rhinitis is a group of non-IgE-mediated diseases that share the common symptoms of nasal congestion, rhinorrhea, sneezing, and/or postnasal discharge, but not the itching that is characteristic of allergic rhinitis. Non-allergic rhinitis can be divided into two broad categories: inflammatory and non-inflammatory etiology. Inflammatory causes include post-infectious (viral and bacterial) rhinitis associated with nasal polyps and non-allergic rhinitis with eosinophilia, where eosinophils are present in nasal swabs but skin tests for air allergens are negative. Non-inflammatory causes include idiopathic non-allergic rhinitis (formerly called vasomotor rhinitis or, colloquially, „overly reactive nose “, which involves the involvement of the nerve, glandular and vascular pathways; however, this term is misleading because it implies a true understanding of the underlying pathophysiology of the disease. when it has not been definitively established [18]); medication rhinitis, which is medication-induced rhinitis; hormonally related (pregnancy); associated with a systemic disease (severe hypothyroidism); and associated with a structural defect (curvature of the septum, head trauma causing cerebrospinal fluid rhinorrhea). The classic symptoms of idiopathic non-allergic rhinitis are nasal congestion, post-nasal fluid and sneezing caused by irritating odors, perfume, wine, and changes in the weather [13].

With non-allergic rhinitis, both inflammatory and non-inflammatory etiology, the lumens of the nasal passages narrow, which causes nasal congestion without a runny nose; frequent or constant exposure to the nasal mucosa of any allergens or irritants. This circumstance leads to dysfunction of the mucous membrane and can cause chronic edema. A blocked nose leads to breathing through the mouth, which is believed to destabilize the upper airway and aggravate the condition.

Three conditions can be considered as a cause of obstruction of nasal breathing: anatomical conditions of the nose (deviation of the septum, hypertrophy of the inferior turbinates), chronic rhinosinusitis (CRS) and chronic nasal inflammation

caused by allergic or non-allergic rhinitis [12].

The nose and sinuses share common vascular and anatomical pathways, which explains why rhinitis coexists with sinusitis. Acute viral rhinitis is the most common form of upper respiratory tract infection and is usually caused by viral rather than bacterial agents [14,15]. Common causes of viral rhinitis include rhinovirus, coronavirus, adenovirus, influenza virus, parainfluenza virus, respiratory syncytial virus, and enterovirus [15,16]. These viruses cause damage to the tight junctions between epithelial cells, destroy their membranes, penetrate into epithelial cells and dominate the metabolic activity of the host cell, using it for their development and causing destruction and death of the host cell. Usually, the symptoms of infectious rhinitis resolve on their own, and there is no need for drug therapy as an initial approach to the disease [16]. Antibiotics are not indicated for viral rhinitis if there is no bacterial superinfection [14,15].

Chronic rhinitis is a long-term, sluggish inflammatory process in the structure of the mucous membranes of the nasal cavity, resulting from contact with infectious agents, allergens, or due to changes in the tone of the vessels located in the submucous layer of the shells. The main manifestation of the disease is persistent difficulty in nasal breathing, in severe cases, it may be completely absent.

The term chronic rhinitis refers to 3 forms of rhinitis: catarrhal, hypertrophic and atrophic. Chronic rhinitis is defined as rhinitis that persists for 2-3 months. It has been established that patients with chronic rhinitis suffer from concomitant diseases such as asthma, conjunctivitis, otitis media, sinusitis, eczema, food allergies, migraines and depression [9]. Chronic rhinitis can cause migraines due to inflammation, mast cell degranulation, and autonomic dysfunction [10]. Chronic hypertrophic rhinitis can cause nasal obstruction and interfere with breathing, and prolonged nasal blockage can cause sleep apnea [11].

It is known that in chronic rhinitis, especially in the hypertrophic form, thickening of the mucosa, submucosa, seromucinous glands, periosteum and bone is characteristic. Changes are more noticeable on the turbinates – this is one of the objective signs of chronic rhinitis. With this form of the disease, there is an active proliferation of the mucous membrane of the nasal passages. The violation causes permanent nasal congestion, which is mechanical in nature and is not sufficiently relieved by vasoconstrictor drugs. Common causes of hypertrophic rhinitis are recurrent nasal infections, chronic sinusitis, chronic irritation of the nasal mucosa from smoking, industrial irritants, prolonged use of nasal drops, vasomotor and allergic rhinitis.

The predominant symptom is nasal congestion. Nasal discharge is thick and sticky. Some complain of headache, heaviness in the head, or transient anosmia.

In the cases examined by us, the predominant symptom in post-infection period was nasal congestion and obstruction of nasal breathing, in the absence of discharge or the discharge were minor. One of the characteristic symptoms of coronavirus infec-



tion is loss of smell, that which was also present in both cases. During illness, swelling of the nasal mucosa occurs, which not only causes mechanical obstruction of nasal breathing, but also disrupts access to the olfactory receptors in the upper part of the nasal mucosa. In addition, prolonged edema can cause degradation of receptors and nerve tissue, which explains in some cases the duration of anosmia.

As for the objective data, the analysis of the study showed: anterior rhinoscopy revealed an increase in the inferior turbinates, which is characteristic of chronic hypertrophic rhinitis. The mucous membrane of the turbinal is thick. When taking vasoconstrictor drugs, there is a slight shrinkage. The maximum changes were observed in the inferior turbinate: the size of the turbinate was exaggerated completely or only at the anterior end, posterior end, or along the inferior border. Characteristic changes were observed mainly in the period after COVID-19 and were not observed in the subjective and objective data of the patients examined before this disease.

In both cases, the process of nasal obstruction was short-lived, I believe that hypertrophic changes mainly affected the mucous and submucosal layers and did not affect the bone.

This is also confirmed by the fact that under the influence of drugs, in particular the use of vasoconstrictors, in both cases the inferior turbinates decreased in size. As a treatment, it is proposed to regularly irrigate the nasal cavity with saline solutions. The use of nasal steroids, which are topical, are not absorbed into the bloodstream and are not addictive, also has a positive result in eradicating symptoms.

This allowed us to use topical corticosteroids, which soon had a positive effect on patients, although this did not exclude the possibility of surgical treatment.

Concluding Remarks

Nasal congestion and difficulty in nasal breathing is one of the symptoms that develop in the post-covid period, which is often the cause of insufficient breathing and a panic attack. Symptoms are similar to those of chronic hypertrophic rhinitis. The reasons are not entirely clear, but the methods of treatment are almost identical to the medical treatment of chronic rhinitis. In conclusion, we must be concerned about many conditions that mimic chronic rhinitis. Attention to the detail of history and physical examination should be considered. These cases showed the role of maintaining differential diagnosis for a common complaint, which were congestion and difficulty in nasal breathing at pos-COVID period.

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