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Case report

Anosmia: A marker of infection by the new corona virus

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ABSTRACT

The diagnosis of Coronavirus Disease 2019 (COVID-19) is based on the identification of common symptoms such as fever, tiredness and dry cough. Anosmia and ageusia are also in fact symptoms of the infection with the new coronavirus and recently were considered as symptoms by the World Health Organization. In this case report we present the new onset anosmia during the COVID-19 pandemic. The patient, 31-year-old, reported olfactory and gustatory dysfunctions as initial symptoms of mild-to-moderate form of the COVID-19. Therefore, chemosensory dysfunctions should serve as a warning to health professionals as a possible marker of infection with the new corona virus.

1. Background

In otorhinolaryngology, the post-viral anosmia is a prevalent symptom (40%). Although the anosmia and the ageusia are also in fact symptoms of the infection with the new coronavirus and recently were considered as symptoms by the World Health Organization (WHO) [1].

The new coronavirus, the third human coronavirus, presents a high pathogenicity and transmissibility potential [2]. Most infected patients with the coronavirus are asymptomatic or with unrecognised manifestations of the disease [3]. This population is also pointed as the virus main transmission source [4].

The objective of this case report is to describe anosmia and ageusia as emergent initial symptoms of COVID-19 (Coronavirus Disease 2019).

2. Case report

Patient MFDJ, 31-year-old, brown, single, previously healthy, from Goiânia, Brazil, works as an orthopedics resident physician at São Paulo School Hospital, Brazil, attending patients of the specialty in different sectors, including the Intensive Care Unit, where several patients were under treatment because of infection laboratorially confirmed of the new corona virus (SARS-CoV-2).

The patient started a sudden symptom of anosmia and ageusia. He denied previous olfactory changes, use of medications and encephalitic skull trauma. Denies alcoholism, smoking and use of illegal drugs. After three days, he had coryza, odynophagia, headache, myalgia and asthenia. On the fourth day, there was clinical worsening with an armpit temperature of 37,8 °C, dry cough and light thoracic pain.

When looking for the emergency, the patient was with fall of the general state, cutaneous pallor, profused sweating and afebrile, oxygen saturation of 94% breathing room air. The examination of the respiratory system revealed respiratory frequency of 20 incursions per minute and pulmonary auscultation showed crackling rales predominating in the right hemithorax and bilateral pulmonary bases. In the otorhinolaryngological clinical evaluation, the oropharynx and anterior rhinopharynx showed no changes. Neurological physical examination without changes.

In that occasion, the laboratorial examinations showed: VHS – 10mm (slightly increased) and blood count, coagulogram, kidney function, hepatic profile (TGO/TGP) and reactive C protein in the normality. The radiographic examination of the chest evidenced the presence of predominant bilateral interstitial infiltrate in the right hemithorax, sparing the pulmonary apex with a slight cephalization of pulmonary vascularization. The Computed tomography of paranasal sinuses was unchanged (Figs. 1 and 2). A nasopharyngeal swab was collected with a positive result for the RT-PCR exam for SARS-COV2.

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After clinical diagnosis, it was instituted home treatment with Oseltamivir 75 mg an oral tablet every 12 hours for five days, Azithromycin 500mg, one oral tablet per day for five days, Acetylcysteine syrup 40mg/ml 15 ml orally at night for 5 days and dipyrone if pain or fever, resulting in marked improvement of the signals and symptoms presented by the patient in five days, however, with persistence of anosmia and ageusia. The recovery of smell and taste occurred on the fourteenth day after symptom onset.

During this treatment, the patient did not show signs of seriousness that would justify hospitalization. Home isolation was maintained for 14 days after the end of respiratory symptoms, with complete recovery of the patient and return to activities without functional impairment.

3. Discussion

According to the WHO, the diagnosis of Covid-19 is based on the identification of common symptoms such as fever, tiredness and dry cough and severe symptoms such as high fever, pneumonia and dyspnoea. In the case described, the patient presented as initial symptoms anosmia (absence of smell) and ageusia (change in taste) followed by odynophagia, cough, low fever, chest pain and mild respiratory distress, so it was considered suggestive of Covid-19 and confirmed, later, by the laboratory examination (RT-PCR) of the patient [1].

The American College of Radiology currently considers chest radiography to be the first-line imaging exam in a suspected or confirmed case of COVID-19. The examination allows the identification of the presence of consolidation translating to a pneumonia process, which is considered a criterion of severity of the disease according to the degree of involvement. The patient’s examination of this case report showed the presence of bilateral interstitial infiltrate and an impairment of less than 50% of the lungs. This is not a specific finding of the COVID-19 infection, but it is the one that was most frequently found in published studies, contributing to the clinical diagnosis [5].

The tomography of the paranasal sinuses in association with the ENT physical examination are the most sensitive means for the diagnosis of pathologies derived from the nasal cavity and paranasal sinuses [6]. This examination was performed on the patient of the case at the time of the diagnosis and during the anosmia period and showed no structural changes. In the present case, nasofibroscopy was not performed due to the high transmissibility potential of the virus. It is important to perform imaging tests to elucidate the pathophysiology of an emerging disease such as Covid-19.

Anosmia and hyposmia are terms that refer to complete and partial loss of smell, respectively. The sense of smell is strongly associated with gustatory perception, so that patients with anosmia have great difficulty in perceiving the taste of food, thus losing their appetite and pleasure with food. Smelling is also associated with the limbic system and some olfactory stimuli can trigger diverse emotional responses and create cortical association with other senses, such as the individual’s memory and the perception of the emotional quality of the stimulus. This way, anosmia can have a significant impact on the quality of life of patients, with difficulty in daily activities, mood disorders, decreased appetite [7].

The pathophysiology of olfactory and gustatory changes has not been

Fig. 1. Computed tomography of paranasal sinuses, soft tissue window, coronal cross section, without structural changes.
fully elucidated yet and has been studied. Angiotensin-converting enzyme 2 (ACE2) is expressed in the nasal mucosa, where it participates in inflammatory processes of respiratory diseases by regulating the levels of inflammatory peptides, such as bradykinin. The most important protein on the surface of the corona virus is protein S (spike), which binds to ECA2 to invade the host cell. However, in patients with COVID-19, the inflammatory component does not seem to be present as important and, for this reason, the change in smell is generally not accompanied by allergic symptoms as in allergic rhinitis, as was seen in the case patient. Therefore, a hypothesis could be that the changes are due to damage caused by the virus to the olfactory pathways, such as an olfactory nerve neuropathy. Anosmia was once a symptom described in other coronavirus infections [8].

Exposure to an intensive care unit with hospitalized patients diagnosed with covid-19 was mentioned by the patient, and it is found in the literature that the disease is airborne by droplets and aerosols and transmission by contact, directly with the body surface of the patient or indirectly through contact with contaminated objects and surfaces [6]. Considering the disease process and severity, the prescription of Azithromycin and Oseltamivir was used for 5 days with monitoring of respiratory functions and surveillance of signs of severity throughout treatment. Measures such as drug maintenance as well as follow-up until complete clinical improvement of the condition and social isolation for 14 days after the disappearance of pulmonary symptoms were followed [9].

The Brazilian Association of Otorhinolaryngology guides the treatment of anosmia to avoid the use of systemic corticosteroids while the Covid-19 pandemic is in force. In relation to the use of topical nasal corticosteroids for chronic use, it can be maintained, and the initiation of medication for acute conditions such as that of the patient in the case should be avoided. Nasal washing with saline solution can be indicated, however, it can get the entry of the virus into the lower airway and the spread of the virus through the environment easy, and the patient should be well oriented in case of prescription [10].

Throughout the treatment, the patient was monitored by the institution’s otorhinolaryngology and infectious disease teams until health was completely restored.

4. Conclusion

Disregarding the disease evolution process and neglecting early, subclinical or atypical symptoms, such as anosmia and ageusia presented by the patient, can worsen the case leading to death. Chemosensory dysfunctions should serve as a warning to health professionals as a possible marker of infection with the new corona virus and its identification aims to interrupt the chain of viral transmission by identifying possible carriers of the virus in order to stimulate early diagnosis and isolation.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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