Review Article

Otorhinolaryngological Manifestations in COVID-19: Minireview of Recent Evidence

ABSTRACT

Objectives: In this review we provide an updated concise review about the most common Otorhinolaryngological symptoms in COVID-19 patients.

Methods: A searched strategy designed on published literature in different large medical databases and journals using various keywords to get the recent described manifestations.

Results: 25 included studies that focused on ENT symptoms and involved the confirmed cases only. 6276 patients were accounted for the results which showed that the most prevalent ENT manifestation were cough in 3498 (56%) patients, headache in 2013 (32%) patients, sore throat in 1966 (31%) patients, anosmia in 1340 (21%) patients, loss of taste in 914 (15%) patients, and rhinorrhea in 196 (3%) patients.

Conclusion: Cough was the commonest symptoms which should raise the suspicion to do COVID-19 swab especially if associated with smell and taste disorder.

Keywords: ENT, Otorhinolaryngology; loss of taste; loss of smell; COVID-19; coronavirus; SARS-CoV-2

1. INTRODUCTION

A new pneumonia-causing virus outbreak occurred in Wuhan, China at the end of December 2019. Since then, Severe Acute Respiratory Syndrome Coronavirus-2 has been identified as a novel member of the coronavirus family and it has quickly become a global pandemic. On March 11, 2020, the World Health Organization (WHO) declared the novel coronavirus (COVID-19) outbreak an international public health emergency (1). By April 6, 2021, the WHO had recorded 131,487,572 reported cases of COVID-19, with 2,857,702 confirmed deaths (2). It is a highly contagious virus, causing severe respiratory failure and, in the worst case, death among infected patients, as it spreads rapidly, it continues to do so because it can cause mild or even no symptoms in most cases (3,4). Early studies ~~have~~ reported that the most frequent manifestations of COVID-19 are cough, fever, sputum production, shortness of breath, arthralgia, myalgia, rhinorrhea, sore throat, headache, and diarrhea (5,6).

COVID-19 patients exhibit a diverse variety of manifestations globally. In addition to otorhinolaryngological symptoms, the loss of smell and/or taste has been documented as a

common symptom in COVID-19-positive patients in several studies, mainly from Europe (7,8). Additionally, reports indicate COVID-19 may present as only isolated anosmia (9). Similarly, Aguseia had a sudden onset and a higher frequency among young populations (10). Since otolaryngologists works in the upper respiratory tract, which is a major reservoir for SARS-CoV-2, they are extremely vulnerable to SARS-CoV-2 infection.

As a result, COVID-19 is a highly infectious disease, and the early detection and isolation of the infected individual is one of the most effective strategies to prevent transmission. Thus, the aim of this review is to summarize recent evidence to identify and address the various otorhinolaryngological (ORL) manifestations identified in COVID-19-positive patients in reviewed and published works.

2. MATERIAL AND METHODS

We viewed and searched articles published in April 2021 from medical databases, including Web of Science, PubMed, Springer, the JAMA network, the New England Journal of Medicine, the American Journal of Roentgenology, the Wiley online library, and Elsevier. We used the following keywords: ENT; otorhinolaryngology; loss of taste; loss of smell; COVID-19; coronavirus; and SARS-CoV-2. This review concentrated on the most common ENT manifestations of COVID-19, mainly sore throat, rhinorrhea, anosmia, and headache. We included studies that establish the incidence of ENT-related manifestations such as sore throat, cough, decreased sense of smell, and running nose in laboratory-confirmed positive COVID-19 patients. We included studies that collected data through self-administered questionnaires, retrospective data from medical records, and prospective studies. We excluded studies that did not reveal ear, nose, and throat symptoms at the time of presentation and studies that focused on one manifestation only. The data were collected, analyzed, and demonstrated in this review using tables and figures.

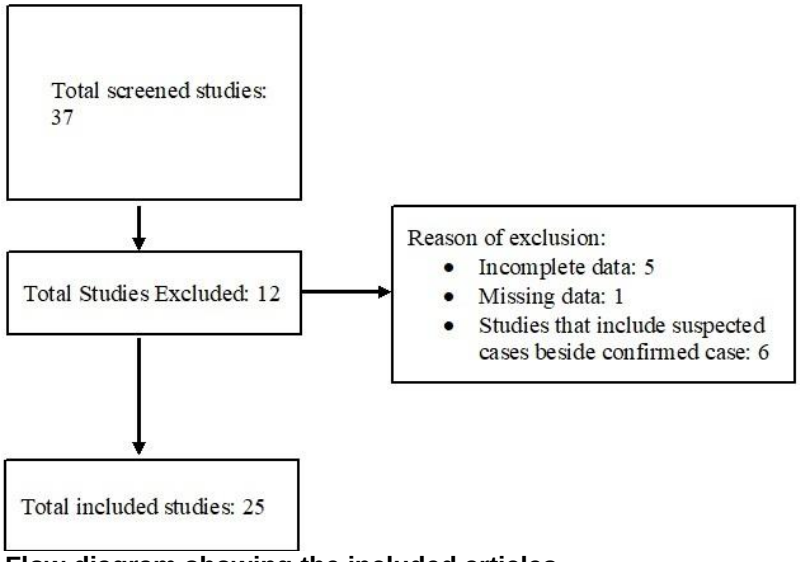

Fig. 1. Flow diagram showing the included articles.

3. RESULTS

There are many studies regarding COVID-19 and ENT manifestations recently, however we only included 25 studies that met our eligibility criteria from different countries with total

number of 6276 COVID-19 positive patients; Table (1). One case-control, ten retrospective, nine prospective and three cross-sectional observational studies, and two case series. Results showed that the common reported ENT manifestation were cough in 3498 (56%) patients, headache in 2013 (32%) patients, sore throat in 1966 (31%) patients, anosmia in 1340 (21%) patients, loss of taste in 914 (15%) patients, and rhinorrhea in 196 (3%) patients.

Table 1. Incidence of the otorhinolaryngological manifestations in Covid-19

Study	Country	Sample size	Cough	Headache	Sore throat	Rhinorrhea	Anosmia	Loss of taste
Ma, 2020	China	216	79					
Wu, 2020	China	38						
Wang, 2020	China	138						
Zhao, 2020	China	101						
Wu, 2020	China	80	58	8	9			
Guan, 2020	China	1099	744	150	153			
Chen, 2020	China	99		3	5	4		
Xia, 2020	China	20			2	3		
Beltrán-Corbellini, 2020	Spain	79				4	25	28
Lechien, 2020	Belgium, France, Spain, and Italy	417	79	45				
Zhang, 2020	China	140	90					
Kuchhal, 2020	India	465	326	56		47	88	
Vaira,2020	Italy	72		30	37	13	44	
Baggett, 2020	United States	147				2		
Qiu, 2020	China	36		3	2			
Speth, 2020	Switzerland	103					63	
Chang, 2020	China	13		3		1		
Zhang, 2020	China	9			1	1		
Lu, 2020	China	171				13		
Sakalli, 2020	Turkey	172	30	17			18	11
Özçelik Korkmaz, 2020	Turkey	116	62	43	38	16	44	48
Biadsee, 2020	Israel	140	94	52	34	34	49	42
Panda, 2020	India	225	86	15		20	29	39
Savtale, 2021	India	180	150	68	85	38	100	106
Borah, 2021	India	2000	1700	1520	1600		880	640

Total		**6276**	**3498**	**2013**	**1966**	**196**	**1340**	**914**

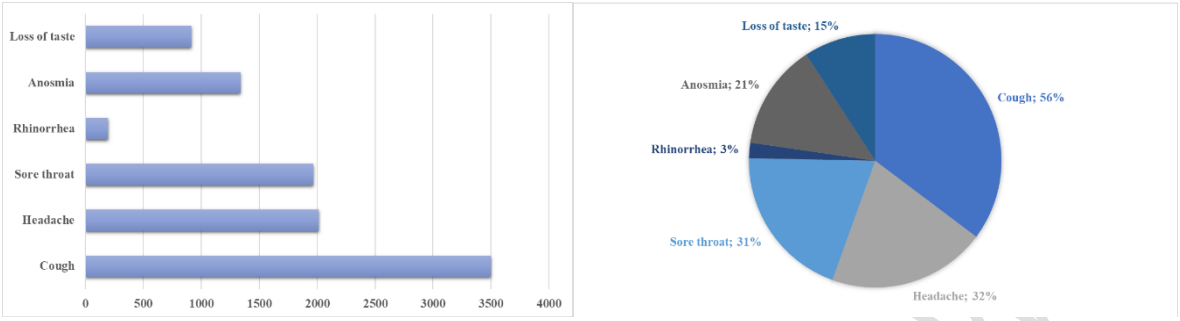

Fig. 2. Incidence of ENT manifestations in COVID-19 patients.

4. DISCUSSION

The coronavirus pandemic increased hospitalizations of patients with pneumonia and multi-organ diseases. It originated from the novel severe acute respiratory syndrome. The coronavirus is transmitted among humans via droplets and direct contact with oral, nasal, and eye mucous membrane. COVID-19 infection may be asymptomatic or cause a broad spectrum of symptoms, ranging from mild to severe respiratory distress syndrome and even death in infected patients. Based on a systematic review and meta-analysis, the rate of asymptomatic cases was 17.9% and 15.6%, respectively (11). This review aims to detect the most common ENT manifestations of COVID-19, mainly sore throat, rhinorrhea, anosmia, loss of taste, and headache.

The results of the current review agree with those of previous reports (9,10): cough, and headache are the most common ENT symptoms of SARS-CoV-2 infection, followed by sore throat. However, it was found that a loss of smell and loss of taste are significant manifestations in other specialized studies that spotlight them and do not include other manifestations. El-Anwar et al. (12) found that the most common ENT manifestations for COVID-19-positive patients are sore throat (11.3%) and headache (10.7%). By contrast, Aremu et al. (13) found cough in 799 patients, headache in 189 patients, loss of smell in 171 patients, rhinitis in 87 patients, loss of taste in 80 patients, and sore throat in 49 patients.

In the current review, anosmia and ageusia were reported in 21% and 15% of patients, respectively, while Qiu et al. (14) found that of the 394 COVID-19 patients screened for the study, 161 (41%) exhibited sudden olfactory and/or gustatory dysfunction. Lechien et al. (15) reported 85.6% olfactory dysfunction, whereas Mao et al. (16) found anosmia in 5.1% of their studied cases. Moreover, Kaye et al. (17) found that anosmia was noted in 73% of COVID-19 patients prior to diagnosis, and in 26.6% of cases, it was the initial symptom. Although anosmia and ageusia does not seems to be specific for COVID-19, as in Menni et al. (18) they found that COVID-19-positive patients reported loss of smell and taste at a rate of 59%, compared with 18% of COVID-19-negative patients.

5. CONCLUSION

This study provides insights into the most common ENT manifestations described in COVID-19-positive patients in the reviewed and published literature. Extensive symptoms, ranging from no symptoms to moderate and life-threatening symptoms, to be related to the novel

coronavirus with many non-ENT manifestations. However, the most frequent otolaryngological symptoms are sore throat, headache, anosmia, a loss of taste, cough, and rhinorrhea. Further studies are needed using a global form to collect data on ENT manifestations in COVID-19 patients.

Recommendation

Our recommendation is to consider a global form to collect complete, reliable, and accurate data on ENT manifestations in COVID-19. We also call for the consideration of a new monitoring system for COVID-19-confirmed patients regarding ENT manifestations during the viral prodromal period.

Limitations

This study's limitations include the potential for information bias during data collection by the included studies (i.e., receiving answers using an electronic self-administered questionnaire); there is also huge variation in the approaches to clinical data collection from one study to another. Moreover, most studies in this review did not mention asymptomatic or COVID-19 cases with mild symptoms that did not need hospitalization. Further, there was no endoscopic or radiological data on otolaryngology in the published papers. The RT-PCR test, on which the COVID-19 diagnosis is based, is not entirely accurate. Furthermore, the studies included in this review were conducted among participants from a limited number of countries, while COVID-19 is a worldwide pandemic.

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