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RESEARCH ARTICLE

ENT Manifestations of COVID – 19: A Retrospective study

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Abstract

The novel COVID-19 infection was the cause of worldwide morbidity and mortality. From an otorhinolaryngologist perspective, high index of suspicion for coronavirus infection is needed while encountering certain clinical presentations in OPD settings. This enables early detection and prompt treatment of affected individuals. To detect, analyse and discuss the different ear, nose, throat and laryngeal (ENT manifestations) reported in RT-PCR COVID-19 Positive patients at Basaveshvara Medical College and Hospital, Chitradurga. A retrospective observational cohort study carried out at Basaveshvara Medical College and Hospital, Chitradurga Karnataka from September 16, 2020 to October 31, 2020. Using a standard, predesigned questionnaire, clinical data was collected from these patients by telephone-based interview. Out of 420 patients diagnosed with Covid-19 infection, 55.9% presented with some ENT manifestation. Majority were male(n=165) and female were less common(n=70). The most common symptom was cough (50.21%), followed by sore throat (38.29%), odynophagia (34.04%), smell disorders (26.38%), taste disorders (20.85%), headache (8.93%), nasal obstruction (6.80%), rhinorrhoea (6.38%). Out of 235 patients with ENT symptoms, 111 patients had smell and/or taste disturbances. During pandemic, clinical diagnosis is an important tool for early diagnosis of asymptomatic or pre-symptomatic suspected Covid-19 patients when diagnostic tests are not available and/or unpredictable. There is scope for further research in development of rapid screening tools for detecting coronavirus infection based on highly suspicious ENT symptoms.

Keywords: ENT manifestations; COVID19; smell and taste disturbances

Introduction

The coronavirus disease 2019 (COVID-19), an acute infectious respiratory disease, caused by a newly discovered coronavirus (SARS-CoV-2, earlier called as 2019-nCoV) has spread globally. The World Health Organization (WHO) officially declared the COVID-19 epidemic as a public health emergency of international concern on January 30, 2020.[1,2]

Symptoms of infection may appear 2–14 days after exposure (in line with the incubation period of COVID-19 virus). Usually, asymptomatic individuals or those with mild symptoms may not take adequate protective measures or seek medical help, thus contributing to spread of infection in the community. When such patients present with highly suggestive ENT-related symptoms, early recognition can help reduce risk to the community as well as health care system.[2]

ENT manifestations of COVID-19

In a retrospective, single-centre study conducted at Wuhan hospital by Chen et al, analysis of clinical and epidemiological features of Covid-19 showed fever (83%), cough (82%), shortness of breath (31%), muscle ache (11%), confusion (9%), headache (8%), sore throat (5%), rhinorrhoea (4%), chest pain (2%), diarrhoea (2%), and nausea and vomiting (1%)as the common manifestations of disease.[3] .Sputum production, headache, hemoptysis and diarrhoea were less common symptoms.[4], Elder male individuals with pre-existing co-morbidities were vulnerable to develop fatal complications like acute respiratory distress syndrome, cardiovascular complications, thromboembolic phenomenon, cytokine storm etc.[3]

Oral ulcers could be the initial presenting symptom in Covid-19 infection and further studies are necessary for confirmation of this finding.[5] Riad studied the presence of new onset of painful tongue ulcers as presenting symptom of Covid-19 infection.[6]. Halitosis, erythematous and edematous gingivae suggestive of necrotizing periodontal disease was noticed in patients with Covid-19 and bacterial coinfections.[7] Occurrence of xerostomia prior to hospitalization was observed in 30 percent of infected cases in a study conducted by Sinjari et al.[8] Dysgeusia (altered taste sensation) and ageusia (loss of taste sensation)are early symptoms of infection.[9]

A prospective study conducted by Speth et al focused on olfactory dysfunction in Covid-19 and found that olfactory dysfunction (hyposmia/anosmia) was prevalent in 61.2 percent of patients. This highly prevalent symptom was often reported with loss of taste, which is noted during early stage of disease. Rhinorrhoea and nasal obstruction were also reported by those experiencing olfactory dysfunction.[10]

A prospective study was conducted by Avci et al, among 1534 coronavirus disease patients by comparing the presenting symptoms, especially anosmia, in the out-patient and in-patient groups. It was observed 44.2 per cent of patients presented with anosmia and 43.9 per cent had dysgeusia. The presence of anosmia and hyposmia was found to be higher in the out-patient compared with the in-patient setting probably due to presence of severe symptoms overshadowing the less severe alterations in sense of smell. Thus patients presenting to ENT practitioner with sudden loss of smell sensation could be considered to be having early and infectious stage of SARS-Cov-2.[11]

A study conducted by Vaira et al. found that, in the majority of cases, altered olfactory and gustatory functions occurred frequently in early stage of disease and completely returned to normal within 30 days. Only 7.2 per cent of patients complained of severe dysfunction at 60 days post-onset of symptoms. Hence there is a need to start specific therapies for moderate to severe olfactory disturbance if it doesn't resolve 20 days after the symptom onset.[12] Standardized tests for assessment of olfactory and gustatory dysfunction in Covid-19 patients conducted by Vaira et al revealed that 73.6 percent of patients reported having olfactory/ gustatory dysfunction, with hyposmia(n=60) and hypogeusia(n=33) being predominant symptoms.[13]

A prospective study conducted by Menni sought to study data collected from RADAR COVID 19 app in UK as part of community survey helped to understand that loss of smell and taste, apart from being predictor of Covid-19 infection, its occurrence in association with symptoms like fever, persistent cough, fatigue ,loss of appetite, diarrhoea, abdominal pain etc.[14]

A prospective study by Hussain et al. showed that epistaxis can be a presenting symptom of Covid-19 infection. Out of 40 patients presenting with epistaxis, 6 were found to be positive on RT-PCR testing, which demonstrates significant association between epistaxis and SARS-CoV-2 infection. The increased risk of epistaxis maybe due to impact of inflammation on nasal mucosa and is an important diagnostic tool which helps in screening of patients during this epidemic.[15]

In a study conducted by Dell'era et al, spontaneous epistaxis was observed in 30 out of 104 patients admitted in the high dependency unit. The common factors among them, that they were receiving low molecular weight heparin and receiving non-humidified oxygen supplementation either via nasal cannula or continuous positive airway pressure as part of Covid-19 pneumonia treatment. Nasal dryness and crust formation caused by the oxygen therapy weakens nasal mucosa and use of anticoagulant also causes an increased risk of bleeding. Hence this study proposed the significance of usage of nasal lubricant and switching to humidified oxygen therapy to reduce the risk of epistaxis in the susceptible patients.[16] Since management of epistaxis is an aerosol-generating procedure and puts the ENT specialist at risk of acquiring infection, it is best to develop strategies to prevent the occurrence of epistaxis.

A study conducted by Mustafa to evaluate the hearing profile of only the asymptomatic PCR-positive Covid-19 cases and interestingly observed that, these patients showed significant high- frequency hearing loss and reduction in amplitude of Transient evoked otoacoustic emissions (TEOAE) in contrast to the normal, on- infected individuals. Hence the Covid-19 infection could cause damage to outer hair cells

even in patients not reporting of any major symptoms.[2] A retrospective cohort study conducted by Trigo et al, patients with Covid-19 infection, headache was the very common symptom among these, its presence was associated with a lower risk of mortality in hospitalized patients compared to those without headache.[17].

Considering all the reported manifestations, the present was conducted to detect, analyse and discuss the different Ear, Nose, Throat and Laryngeal manifestations (ENT Manifestations) reported in RT-PCR COVID-19 Positive patients at Basaveshvara Medical College and Hospital, Chitradurga.

Materials and Methods

A retrospective observational cohort study was carried out by the Department of ENT, Basaveshvara Medical College Hospital, Chitradurga to study the ENT-related clinical manifestations among RT-PCR -Positive COVID-19 cases diagnosed at the hospital from September 16 to October 31, 2020. Convenient sampling done to selected study subjects. All the study participants were briefed regarding the purpose of the study and written, informed consent was sought from the participants of the study. Total 420 patients were included as per inclusion and exclusion criteria. A standard predesigned questionnaire was designed and data was collected from these patients by telephone-based interview.

Inclusion criteria

1. The RT-PCR COVID-19 positive patients
2. Age group belonging between 18 - 65 years,

Exclusion criteria

1. Patients with COVID-19 infection diagnosed on the basis of positive CBNAAT/Rapid Antigen Test or suspicious HRCT thorax findings.
2. Patients with COVID-19 infection aged less than 18 years and more than 65 years

Results

Out of 420 RT-PCR COVID-19 positive patients detected at Basaveshwara Medical College Hospital during the period from September 15 to October 31, patients with at least 1 ENT symptom were 235 in number. Thus 55.95% of patients presented with some form of ENT manifestation. This data validates the need for such a study elucidating the various clinical presentations of COVID-19 infection that can be encountered by ENT practitioners.

The data collected shows that out of 235 patients presenting with ENT symptoms in the study cohort, majority were male patients (n=165) and females were lesser in number (n=70). The age range of patients included in the study was 18–65 years of age and the mean age of patients with ENT symptoms was 41±14.9 (mean ± Standard deviation).

Hence male preponderance and increased likelihood of younger and middle-aged population to present with ENT symptoms was noted. These patients were more likely to develop mild disease necessitating home quarantine and treatment or short duration of hospitalization. Those patients with severe disease and requiring longer duration of hospitalization, with need for supplemental oxygen and in some cases, ICU care, were relatively lesser in number. Such patients were noted to be in the elderly age group and had associated comorbidities.

The most common symptom was cough (50.21%), followed by sore throat (38.29%), odynophagia (34.04%), smell disorders (26.38%), taste disorders (20.85%), headache (8.93%), nasal obstruction (6.80%), and rhinorrhoea (6.38%). Other less common symptoms were giddiness (3.40%), burning sensation in the mouth (1.27%), painful lesions in mouth (1.27%), bouts of hiccups (0.425%), which was seen in 1 patient.

The most prevalent symptom was cough, usually dry and only few patients complained of associated expectoration (19 out of 118 patients with cough). Sore throat or sensation of discomfort in throat was also commonly described complaint. Painful deglutition or odynophagia was next most common symptom and occasionally associated with sore throat.

Sudden onset of anosmia or loss of sensation of smell was reported by several patients with no prior disease causing this symptom. Hyposmia or reduced smell sensation was also reported by other patients. Similarly, altered taste sensation/ dysgeusia and loss of taste sensation/ageusia were other commonly reported symptoms. The disorders of smell and taste are important indicators of COVID-19 infection. Out of 235 patients with ENT symptoms, 111 patients had smell and/or taste disturbances. Alteration in smell was seen in 62 patients and alteration in taste was seen in 49 patients respectively. Smell disorders contributed to 26.38% and taste disorders contributed to 20.85% of the total ENT manifestations. Out of these 111 patients, combined smell and taste disturbances seen in 15 patients, which means among the patients with ENT symptoms, 6.38% of the symptoms are attributed to combined taste and smell disorders.

Table 1. Distribution of patientsbased on gender

Gender	No. of cases	%
Male	285	67.9
Female	135	32.1
Total	420	100.0

Table 2. Distribution of patients based on constitutionalsymptoms

Symptoms	No. Of Cases
Fever	19
Myalgia	103
Vomiting	04
Fatigue	137
Diarrhoea	2

Table 3. Age and gender wise distribution

Age (yrs)	Male		Female		Total
	No.	%	No.	%	No.
18 - 40	116	40.7	49	36.3	165
41 - 60	95	33.3	42	31.1	137
61 - 82	74	26	44	32.6	118
Total	285	100	135	100	420

Table 4. Age wise distribution based on at least on ENT symptom

Total cases	18-40 yrs	41-60 yrs	61-82 yrs
	165	137	118
at least 1 ENT symptom	116	98	21
%	70.3%	71.5%	17.8%

Table 5. Gender wise distribution based on at least on ENT symptom

Total cases	Male	Female
	285	135
at least 1 ENT symptom	164	71
%	57.5%	52.6%

Table 6. Age wise distribution based on ENT symptoms alone

Total cases	18-40 yrs	41-60 yrs	61-82 yrs
	165	137	118
ENT symptoms alone	54	13	1
%	32.7	9.5	0.8

Table 7. Gender wise distribution based on ENT symptoms alone

Total cases	Male	Female
	285	135
ENT symptoms alone	39	29
%	13.7%	21.5%

Table 8. Incidence of ENT symptoms

ENT symptoms	No. of cases
Cough	115
Odynophagia	90
Dysphagia	81
Hyposmia	22
Anosmia	40
Dysgeusia	28
Ageusia	21

Table 9. Age wise incidence of ENT symptoms

ENT symptoms	18 - 40 yrs (n = 165)		41 - 60 yrs (n = 137)		61 - 82 yrs (n = 118)		X^2
	No.	%	No.	%	No.	%	
Cough	36	21.8	64	46.7	15	12.7	41.09
Odynophagia	25	15.2	52	38.0	13	11.0	33.69
Dysphagia	37	22.4	38	27.7	6	5.1	22.62
Hyposmia	17	10.3	5	3.6	0	0.0	15.75
Anosmia	31	18.8	9	6.6	0	0.0	30.24
Dysgeusia	18	10.9	10	7.3	0	0.0	13.29
Ageusia	15	9.1	3	2.2	3	2.5	9.59

Chi-square test,
* P < 0.05, Sig
** P < 0.001, High sig.

Table 10. Gender wise incidence of ENT symptoms

ENT symptoms	Male (n = 285)		Female (n = 135)		X^2
	No.	%	No.	%	
Cough	85	29.8	30	22.2	2.66
Odynophagia	66	23.2	24	17.8	1.58
Dysphagia	59	20.7	22	16.3	1.14
Hyposmia	14	4.9	8	5.9	0.19
Anosmia	23	8.1	17	12.6	2.17
Dysgeusia	19	6.7	9	6.7	0.00
Ageusia	10	3.5	11	8.1	4.15

Chi-square test
* P < 0.05, Sig

Table 11. Recovery period for various ENT symptoms

ENT symptoms	Recovery period	
	Mean	SD
Cough (days)	5.2	0.8
Odynophagia (days)	3.2	0.9
Dysphagia (days)	3.3	0.8
Hyposmia (wks)	2.6	0.7
Anosmia (wks)	2.5	0.7
Dysgeusia (wks)	2.5	0.7
Ageusia (wks)	2.5	0.7

Discussion

Covid-19 causes illness on a wide spectrum with most of the infected individuals developing respiratory illness of mild to moderate intensity and usually recovering without need for special treatment and those with severe form of disease develop life-threatening complications.[2] The emergence of Severe acute respiratory syndrome Coronavirus -2 (SARS - CoV-2) pandemic has shaken the healthcare services worldwide due to the alarmingly increased spread and the life-threatening nature of the disease. ENT specialists are at increased risk of infection as they routinely perform examination of upper aero-digestive tract as well as aerosol-generating procedures. Hence they should wear FFP3/N95 mask, goggles, disposable and fluid resistant gloves and gown while examining patients.[18]

Patients presenting as out-patients to the ENT clinic may not always have typical symptoms commonly associated with Covid-19 infection such as fever, cough, myalgia, diarrhoea, vomiting etc. Loss of smell and/or taste may occur even in the absence of other general or ENT-related symptoms as observed by Sakalli et al. It could also be the initial and only sign of disease in some individuals.[19] So it is imperative for otorhinolaryngologists must keep have high degree of suspicion in sudden onset gustatory and olfactory dysfunction in the absence of rhinitis. Surveillance for Covid-19 infection and screening test should be recommended to such patients for early detection and isolation, so as to tackle the epidemic. Usage of a novel device for olfactory sense detection by digital means designed by Prasanna Gandhi et al as a means for rapid pre-screening of individuals opens up new avenues of research in this field.[20]

With suspicion of Covid-19, RT-PCR assay is the screening tool commonly used. Real-time reverse transcriptase polymerase chain reaction (RT-PCR) assays are the standard for detecting coronavirus in respiratory secretions collected from nasopharyngeal and oropharyngeal swabs. This test has been found to have high false negative rate as compared to chest CT(computed tomography) scan ,which has higher sensitivity for diagnosing Covid-19 infection.[21,22] However, clinical diagnosis is an important tool for early diagnosis of asymptomatic or pre-symptomatic suspected Covid-19 patients when diagnostic tests are not available and/or unpredictable. Hence, as ENT practitioners, it is imperative to know the varied presenting symptoms of this disease to facilitate early detection of infection and isolation of the infected individual. During this pandemic, such an approach based on high degree of clinical suspicion, helps combat the rapid spread and reduce the disease load. There is scope for further research in development of rapid screening tools for detecting coronavirus infection based on highly suspicious ENT symptoms.[21,23,24]

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