

## Otorhinolaryngological Manifestations in Covid 19: A Prospective Study

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### Abstract

**Introduction:** Otorhinolaryngological manifestations in COVID-19 were not rare and not much emphasized. The aim was to know the prevalence of Otorhinolaryngological manifestations among confirmed SARS-CoV-2 patients in a tertiary care hospital, Northern Kerala. The objectives were to study Otorhinolaryngological problems during COVID and post COVID period and to determine the duration and recovery of smell/taste disturbances.

**Materials:** This was a prospective study of 470 covid-19 patients (categorized into A, B and C as per COVID severity classification by WHO), from March-01-2021 to June-30-2021 in a tertiary care hospital. A pretested semi-structured questionnaire was administered via telephonic interview after explaining the purpose of study and obtaining verbal consent. It included history of ENT symptoms, olfactory and gustatory function. Patients who were unresponsive, unsound and unreachable were excluded. Chi-Square test was used for statistical analysis; p value < 0.05 was considered as significant.

**Results:** In this study, 241(51%) were males and 229(49%) were females, 61 (13%) patients in category-A, 329(70%) in category-B and 80(17%) in category-C. The commonest symptoms were anosmia/ hyposmia (80%), headache (74.89%), ageusia/ dysgeusia (76.38%), cough (71.3%). Commonest problems in post-covid period were dyspnea (51.5%), anosmia/ hyposmia (42.1%) and ageusia/ dysgeusia (76.38%). 8.4% and 7.7% of patients were not recovered from smell and taste disturbances during this period.

**Conclusion:** Results showed that the commonest symptoms were headache, anosmia, ageusia, cough and dyspnea. This study confirmed high prevalence of smell/taste disorders in COVID-19 infection with self-recovery among half of the cases after nearly 2 weeks. Hence the symptoms could be considered as early identifiers/ markers and those helped in early detection and isolation of the patients for further management.

**Keywords:** Ageusia, Anosmia, Dysgeusia, Dyspnea, Hyposmia, COVID-19.

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## Introduction

As we all know COVID 19 infection is a global pandemic now. It is an enveloped, non-segmented, single-stranded, positive strand [1-3] RNA virus, with a nucleocapsid of helical symmetry [4,5]. The main target of Coronavirus was epithelial cells [6] and the major mode of transmission of COVID 19 virus was contact, droplet, fomites, airborne, blood borne, and mother to child [7] Even though the incubation time for the virus was 14 days, most of the patients got an infection within 4-5 days [7,8].

The main target of the COVID 19 virus was the lower respiratory tract and the major symptoms were cough, dyspnea, and tightness of the chest. In severe cases, it progressed to ARDS [9]. The majority of cases with COVID 19 infections have mild illnesses. But patients with co-morbidities like cardiovascular diseases, hypertension, diabetes mellitus, kidney diseases, and COPD were prone to developing complications like acute kidney injury, DIC, pneumonia, acute respiratory failure, and shock. For breaking the chain of COVID 19, we were using many preventive measures like social distancing, masks, face shields, hand sanitizing, and isolation of the patients.

But it also caused various ENT manifestations which were not much focused on in various studies. The most common ENT symptoms were headache, disturbances in smell, taste, and sore throat. The time for recovering from anosmia and ageusia was different in various studies. Mucormycosis cases were also getting reported from various parts of the world. We needed to be aware of the Covid-related ENT diseases while treating patients in those situations. So, it was necessary to identify & study these symptoms in detail. This research article was a study that gave more importance to

otorhinolaryngological manifestations of COVID 19. A correlation of ENT manifestations with the severity of the disease was also attempted in this study. The main aim was to know the prevalence of ENT presentations among laboratory-confirmed SARS-CoV-2 patients in a tertiary care hospital in northern Kerala. The main objective was to find out the various ENT manifestations during COVID and post-COVID period, along with that to determine the duration and recovery of disturbance in smell and taste.

## Methods

This prospective study was conducted among 470 covid -19 patients who were hospitalized at the tertiary care hospital during the period from March 1 2021 to June 30, 2021. The contact information of the study participants was collected from the Medical Register Department. A pretested semi-structured questionnaire was administered via a telephonic interview after explaining the purpose of the study and obtaining verbal consent.

It included the history of all ENT symptoms and olfactory and gustatory function. Patients who were unable to answer (intubated, receiving non-invasive ventilation, altered mental status/psychiatric illness), unreachable by telephone, and children under 15 years of age were excluded from our study. The data was analyzed using standard statistical methods using mean, standard deviation, percentage and the correlation was calculated using fisher exact test and p value less than 0.05 was considered significant.

## Results

The study included 470 COVID 19 laboratory-confirmed patients. Out of these

241 (51%) were males and 229 (49%) were females. Out of these patients, 458 (98%) recovered and 12 (02%) expired. In this study, the patients were categorized into

category A: 61 patients (13%), category B: 329 patients (70%), and category C: 80 patients (17%) (As per covid severity classification by WHO), (Figure 1)

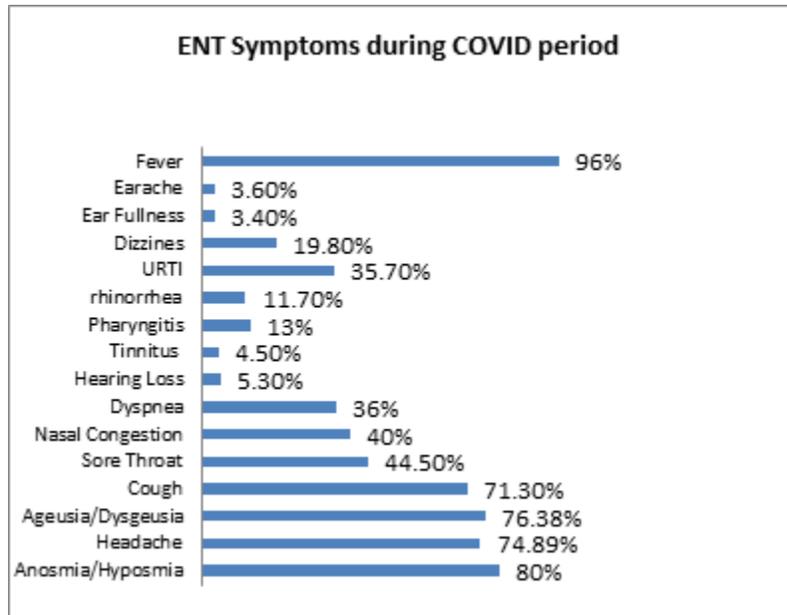


Figure 1: Showing the incidence of ENT symptoms among the COVID-19 positive patients (n=470).

The most common ENT symptoms with which the patients presented were anosmia/hyposmia (80%), headache (74.89%), ageusia/dysgeusia (76.38%), cough (71.3%), sore throat (44.5%), nasal congestion (40%), dyspnea (36%), hearing loss (5.3%) and tinnitus (04.5%), (Figure 2)

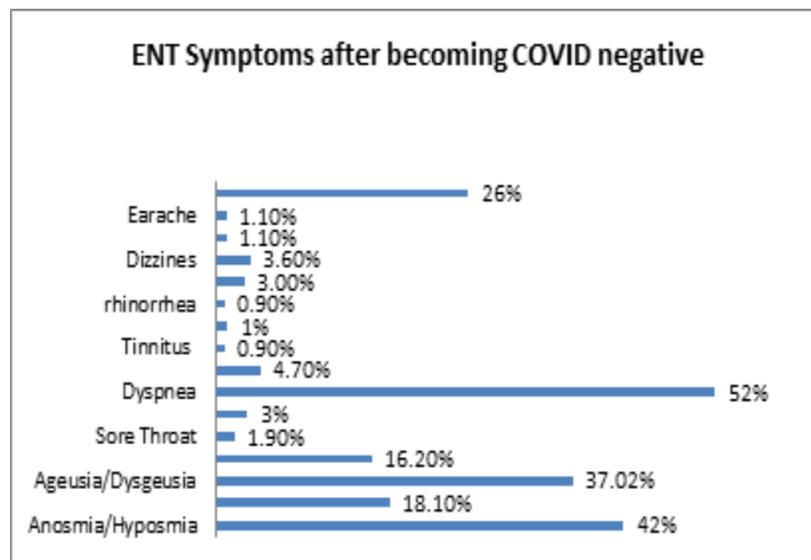
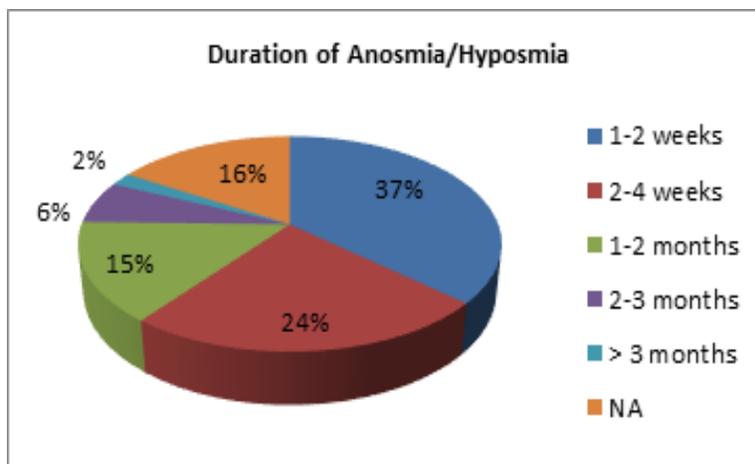


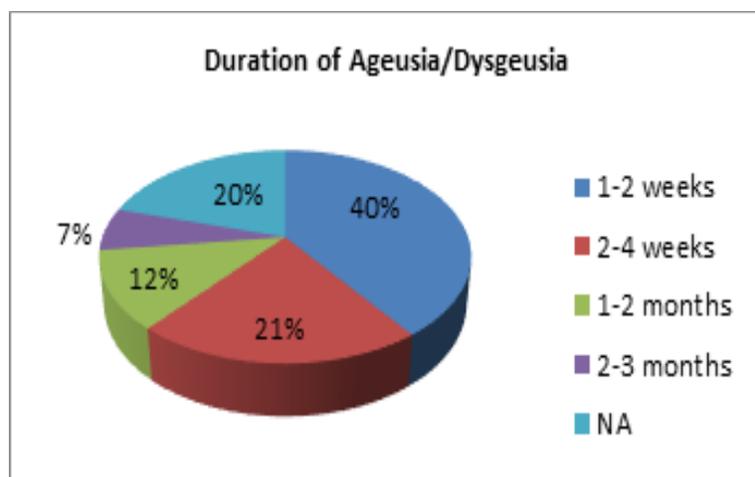
Figure 2: Showing the incidence of various symptoms in the COVID-19 positive patients (n=470).

The most common ENT sequelae after becoming COVID negative were dyspnea (51.5%), anosmia/hyposmia (42.1%), ageusia/dysgeusia (37.02%), headache (18.1%), cough (16.2%), and hearing loss (04.7%). 26% patients do not have any symptoms (**Figure 3**).



**Figure 3: Showing the post COVID-19 sequelae and their incidences (n-470).**

In this study the duration of disturbance in taste and smell was also calculated. It was found that the duration of anosmia/hyposmia was for 1-2 weeks in 36.6% of patients, 2-4 weeks in 23.8%, 1-2 months in 14.9%, 2-3 months in 6.4%, and lasted for more than 3 months in 2%. (**Figure 4**)



**Figure 4: Showing the duration of various symptoms in post COVID-19 period (n-470).**

The duration of ageusia/dysgeusia was 1-2 weeks in 39.4% of patients, 2-4 weeks in 20.9%, 1-2 months in 11.7%, 2-3 months in 06.4%, and lasted for more than 3 months in 01.3%. (Figure 4) 08.4% and 07.7% of patients did not recover from anosmia/hyposmia and ageusia/dysgeusia respectively during the period of our study.

In category B most of the patients (37%) recovered from anosmia/hyposmia within 1-2 weeks. It lasted more than 3 months in 3% of Covid 19 patients. In category C, 33.7% recovered from the disturbance in smell within 2-4 weeks. In 8.75% of patients, it lasted for more than 2-3 months (Table 1). It is statistically significant (p value=0.001), (Table 1).

**Table 1(Fisher exact test): Showing the correlation of duration of symptoms among the three groups in the study (n-470).**

Category	Duration of Anosmia/ Hyposmia						Total	p value
	Not applicable	1-2 weeks	2-4 weeks	1-2 months	2-3 months	>3months		
A	9	32	7	6	7	0	61	<b>0.001</b>
B	54	123	78	48	16	10	329	
C	13	17	27	16	7	0	80	
Total	76	172	112	70	30	10	470	

In category B most of the patients (39%) recovered from ageusia/dysgeusia within 1-2 weeks. It lasted more than 3 months in 1.8% of patients. In category C patients 28% recovered from the disturbance in taste within 1-2 weeks. In 10% it lasted for more than 3 months. It is statistically significant (p value=0.006). (Table 2)

**Table 2 (Fisher exact test): Showing the recovery of symptoms in the three groups and their correlation (n-470).**

Category	Duration of Ageusia/ Dysgeusia						Total	p value
	Not Applicable	1-2 weeks	2-4 weeks	1-2 months	2-3 months	3-6 months		
A	13	32	4	5	7	0	61	<b>0.006</b>
B	66	130	73	38	16	6	329	
C	16	23	21	12	8	0	80	
Total	95	185	98	55	31	6	470	

## Discussion

In December 2019, an infection caused by SARS Cov 2 Virus was reported from China. On February 11, 2020, WHO named this disease as COVID 19 [10]. The disease now rapidly spreading across the world creating a health crisis [11]. COVID 19 presented with a wide range of clinical symptoms ranging from mild fever, sore throat, and disturbance in smell and taste up to septic shock, ARDS, acute kidney injury, and thromboembolic diseases. Even though it is spreading all over the world, the exact clinical features of COVID 19 infection remain unclear. The nose, nasopharynx, and oropharynx are the main sites of lodging of the COVID 19 virus. So the Otorhinolaryngologists have more risk, because, we are dealing with the upper Respiratory Tract. However, most literature is giving importance to Lower Respiratory

Tract symptoms because of the complications. The review study by Lovato and Flippis (2020) showed that fever (85.6%), cough (68.7%), and fatigue (39.4%) were more common symptoms. The symptom of rhinorrhea and dysfunction of olfaction & gestation were found uncommon [12]. In Gane's (2020) study, fever and dry cough were more common presentation [13]. Cough, myalgia, and loss of appetite are the most commonly reported symptoms in Leichien *et al* (2020) study [14] Kaye *et al* report on 237 US patients with COVID 19 infection and 73% of patients present with anosmia and which is the initial symptom in 26.6% [15]. In this study most common ENT symptoms with which the patients presented were anosmia/ hyposmia (80%), headache (74.89%), ageusia/ dysgeusia (76.38%),

cough (71.3%), sore throat (44.5%), nasal congestion (40%), dyspnea (36%). Similar findings were seen in a study done by Hironya Borah *et al* [16] So, these ENT symptoms occur early in COVID 19 infection, helping in early detection of COVID 19 and further isolation of patients [17]. Thus we can break the chain of transmission of disease. Since data was collected via telephonic interview rather than a face-to-face interview, there might have been underreporting of symptoms and duration. This study was mainly based on the patient's experiences regarding their symptoms. At present, not many studies are done to know about the pathogenesis of olfactory & gustatory dysfunction. The ENT complications due to COVID 19 are not mentioned in this study.

### Conclusion

COVID-19 infection has a wide spectrum of ENT manifestations. The most common symptoms were headache, disturbance in taste & smell, cough, sore throat, and dyspnea. Most of the patients recovered within 1 month. 08.4% and 07.7% of patients have not recovered yet from the disturbance in smell and taste during the period of our study. So, more attention to ENT symptoms should be paid which appear early. There was a high prevalence of smell & taste disorders with COVID-19. So, these ENT manifestations could be used as an early marker for detection, isolation, and treatment of the disease. However, further studies are required to know the pathogenesis of ENT symptoms properly and also for definitive treatment of these symptoms.

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