



A CROSS-SECTIONAL STUDY OF EAR, NOSE AND THROAT MANIFESTATIONS IN POST-COVID – 19 PATIENTS IN A TERTIARY CARE HOSPITAL.

ENT

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ABSTRACT

Introduction: COVID-19, caused by SARS-CoV-2, has emerged as a global health crisis with diverse clinical presentations, including significant Ear, Nose, and Throat (ENT) manifestations. Understanding these post-infection symptoms is crucial for comprehensive patient care and management. **Methodology:** This study enrolled 250 post-COVID-19 patients from a tertiary care hospital to investigate ENT symptoms following recovery from COVID-19. Data collection included patient histories, symptom onset timelines, and detailed ENT examinations. Statistical analysis was performed to determine symptom prevalence and associations with demographic factors. **Results:** Of the patients studied, 71% reported ENT symptoms within 10 days of COVID-19 diagnosis, highlighting rapid onset post-infection complications. Nose-related predominant symptoms were hyposmia/anosmia (47%), and nasal blockage (44%). Other prevalent symptoms were headache (32%) and loss of taste sensation (38%). Dental manifestations such as dental pain or loosening of teeth were noted in 53% of cases. Facial symptoms, including pain (59%), swelling (51%) and proptosis (38%), were also significant. Ear-related complaints were less common, reported in 5% of patients. **Conclusion:** This research underscores the diverse and often severe ENT sequelae that follow COVID-19 infection, underscoring the need for continued monitoring and tailored management strategies. The findings suggest a complex interplay of viral pathophysiology affecting multiple ENT systems post-recovery. Further studies are warranted to elucidate underlying mechanisms and optimize treatment protocols for long-term ENT complications in post-COVID-19 patients, ensuring comprehensive and effective healthcare delivery.

KEYWORDS

INTRODUCTION

COVID-19, caused by SARS-CoV-2, emerged as a global pandemic. Initial symptoms predominantly affected the lower respiratory tract.⁽¹⁻³⁾ However, the virus also manifests with a wide spectrum of ENT (Ear, Nose, and Throat) symptoms, notably anosmia (loss of smell) and dysgeusia (loss of taste), which can sometimes be the sole initial indicators in asymptomatic or mild cases.⁽⁴⁾ This neuroinvasive potential is attributed to the virus's ability to invade the CNS through the olfactory epithelium.⁽⁵⁾

Alongside these sensory losses, patients have reported symptoms such as pharyngitis, nasal congestion, rhinorrhea, and earache. Sensorineural hearing loss has also been observed, potentially linked to the virus's impact on cochlear function.⁽⁶⁾ The upper aerodigestive tract, particularly the nasal cavity and nasopharynx, harbours high viral concentrations, posing significant risks during ENT examinations due to potential aerosol generation.⁽⁷⁻⁹⁾

Otorhinolaryngologists are particularly vulnerable due to their frequent exposure to these high-risk areas. Despite extensive research on acute ENT manifestations during active infection, a notable gap exists in understanding post-COVID-19 ENT sequelae and associated opportunistic infections. Addressing this gap is crucial for comprehensive patient care and mitigating potential long-term health impacts.

Methodology

A single-centric, cross-sectional study was conducted for 18 months in 250 patients coming for follow-up in the outpatient department (OPD) of ENT in a Tertiary Care Hospital Patients who were 18 years of age, gave consent and became negative within 6 months of being included in the study. Those who were COVID-19 positive had a history of previous ENT manifestations and were never tested positive within 6 months were excluded from the study.

The study was conducted after obtaining permission from the

Institutional Ethics Committee (IEC). Informed consent was obtained from all participants before data collection. Measures were taken to ensure confidentiality and compliance with ethical standards throughout the study.

Demographic details (age, gender, co-morbidities) and ENT-related complaints were collected using a structured questionnaire administered by trained healthcare professionals. ENT manifestations assessed included hyposmia/anosmia, nasal blockage, headache, loss of taste sensation, dental pain, facial pain, swelling, proptosis, and ear complaints. Maintaining the anonymity of the patient, all the data collected from the patient was compiled and analysed. Appropriate tests were planned to be applied wherever necessary. Descriptive statistics (frequencies, percentages) were used to summarize demographic characteristics and prevalence of ENT symptoms. Inferential statistics, such as chi-square tests, were planned to examine associations between demographic factors, co-morbidities, and ENT symptoms where applicable.

RESULTS

The mean age of participants was 43.06± 14.46 years. 25% (63) were seen between 41- 50 years of age group, 63% (157 cases) were known cases of Diabetes, 72% (181) had a duration of presenting symptoms less than equal to 10 days, 53% (133 cases) had steroid-based treatment during COVID-19 infection.

Table 1 – Frequency Distribution Of Variables

Variable	Frequency (n= 250)	Percentage
Age (years)		
18 to 30	58	23%
31 to 40	48	19%
41 to 50	63	25%
51 to 60	50	20%
61 to 70	24	10%
>70	7	3%

Sex		
Male	157	63%
Female	93	37%
Known case of Diabetes		
Yes	157	63%
No	93	37%
Duration of presenting symptoms		
≤ 10 days	181	72%
11 to 20 days	48	19%
21 to 30 days	15	6%
≥ 30 days	6	2%
Gap between COVID- 19 infection and of presentation of symptoms		
≤ 10 days	177	71%
11 to 20 days	47	19%
21 to 30 days	15	6%
≥ 30 days	11	4%
Treatment of steroids during COVID- 19		
Yes	133	53%
No	117	47%
Oxygen requirement during COVID- 19		
Yes	111	44%
No	139	56%

Table 2- Post COVID-19 Manifestation

Post COVID-19 ENT manifestations		
Only Ear complaints	12	5%
Only Nose complaints	112	45%
Only Throat complaints	52	21%
Only Other complaints	95	38%
Nose & throat complaints	20	8%
Throat & Other complaints	25	10%
Nose + Throat + other complaints	11	4%
Nose complaints (n= 132)		
Hyposmia/ Anosmia	62	47%
Nasal blockage	58	44%
Rhinitis	8	6%
Headache	42	32%
Epistaxis	8	6%
Throat Complaints (n=72)		
Loss of Taste Sensation	27	38%
Irritation in throat	0	0%
Whitish patch in buccal mucosa/ tongue	0	0%
Sore throat	0	0%
Loosening of tooth/ Dental Pain		
Discolouration of hard palate	4	6%
Swelling over hard palate	7	10%
Perforation	6	8%
Ear complaints (n= 12)		
Ear discharge	0	0%
Earache	0	0%
Decreased hearing	0	0%
Giddiness	12	100%
Tinnitus	0	0%
Other complaints (n=120)		
Facial pain	71	59%
Proptosis	46	38%
Facial Swelling	61	51%
Loss of vision	14	12%

The data presented outlines post-COVID-19 ENT manifestations among patients, detailing various complaints across different categories. Nose-related issues were more prevalent, affecting 45% of patients, with hyposmia/anosmia (47%) and nasal blockage (44%) being the most common symptoms. Throat complaints affected 21% of patients, primarily manifesting as dental pain (53%) and loss of taste sensation (38%). Ear complaints were reported by 5% of patients, predominantly characterized by giddiness (100%). Other complaints, reported by 38% of patients, included facial pain (59%), facial swelling (51%), and proptosis (38%). The findings illustrate a diverse range of ENT symptoms post-COVID-19, with notable prevalence of nasal and throat issues, alongside various less common but impactful symptoms affecting patients' overall health and wellbeing.

Table 3- Association Between Sex And ENT Complaints

	Male	Female	p- value	OR	χ ²
Nose related complaints					
Yes	87	57	0.36	0.78	0.36
No	70	36			
Throat related complaints					
Yes	52	20	0.04	1.80	3.84
No	105	73			
Ear related complaints					
Yes	7	5	0.74	0.82	0.10
No	150	88			

The table shows that there is no significant difference in the occurrence of ear and nose-related complaints between genders, as indicated by high p-values (0.74 and 0.36, respectively) and odds ratios close to 1 (0.82 and 0.78, respectively). However, for throat-related complaints, there appears to be a significant association with gender, with a p-value of 0.04 and an odds ratio of 1.80, suggesting that males are 1.80 times more likely to report throat-related complaints compared to females. These findings imply that while gender does not play a significant role in the likelihood of ear and nose complaints, it does have a notable influence on throat-related issues, highlighting potential differences in susceptibility or reporting between males and females in this particular category of health concerns.

Table 3- Association Between Diabetes Mellitus (DM) And ENT Complaints

Diabetes Mellitus						
	Present	Absent	Total	p- value	OR	χ ²
Nose related complaints						
Yes	80 (60.06%)	52 (39.40%)	132 (100%)	0.38	0.79	0.74
No	70 (66.03%)	36 (33.97%)	106 (100%)			
Throat related complaints						
Yes	40 (55.56%)	32 (44.44%)	72 (100%)	0.13	0.65	2.27
No	117 (65.73%)	61 (34.26%)	178 (100%)			
Ear related complaints						
Yes	7 (58.33%)	5 (41.67%)	12 (100%)	0.74	0.82	0.10
No	150 (63.02%)	88 (36.97%)	238 (100%)			

The percentages of individuals reporting these complaints among those with and without diabetes mellitus do not differ significantly, as indicated by the p-values (0.38 for nose complaints, 0.13 for throat complaints, and 0.74 for ear complaints). Similarly, odds ratios close to 1 (0.79 for nose, 0.65 for throat, and 0.82 for ears) suggest no substantial association between diabetes status and the likelihood of experiencing these complaints.

Table 4-**DISCUSSION**

The study on post-COVID-19 ENT manifestations among 250 patients provides valuable insights into the prevalence, characteristics, and implications of these symptoms in recovering individuals. Understanding these manifestations is crucial for optimizing patient care and management strategies in the post-pandemic era.

Prevalence And Characteristics Of ENT Manifestations

The study observed a significant incidence of ENT symptoms post-COVID-19, with nose complaints being the most common (53%). This aligns with findings from previous research by Srivastava et al in which a total of 170 (68%) patients were symptomatic and 80 (32%) were asymptomatic with 92 cases having nasal congestion (54.14%).⁽¹⁰⁾ In the study by El-Anwar et al, it was observed that the most frequent ENT manifestations reported were sore throat (30%) followed by nasal congestion (28.3%) and nasal obstruction (26.7%).⁽¹¹⁾ These symptoms not only impact quality of life but also serve as important clinical indicators for identifying COVID-19 infections early on, as noted by studies like Panda et al, who observed that smell and taste disturbance had an overall incidence of 20% and 45% in 145 patients with mild COVID-19 (asymptomatic = 80).⁽¹²⁾

In our study, throat complaints were also prevalent (29%), with a substantial number reporting of loss of taste sensation (38%) being the most common and related symptoms. This mirrors observations by Jain et al. (2020) where 99 patients (24.1%) reported chemosensory dysfunction, of which 85 patients (20.7%) reported both olfactory and taste dysfunction.⁽¹³⁾ Similar results were observed by Savtale S et al in which throat pain (47.2%), loss of smell (55.5%), loss of taste (58.8%) and hearing loss (54.44%) were the common ENT complaints in 180 patients.⁽¹⁴⁾ Carignan et al. (2020), concluded that there is a strong association between olfactory and gustatory symptoms and SARS-CoV-2 positivity. (15) Such findings underscore the multifaceted nature of COVID-19 symptoms and the need for comprehensive post-recovery monitoring.

Demographic And Clinical Factors Influencing ENT Manifestations

The study highlighted demographic factors such as age and gender in relation to ENT symptoms. The majority of participants fell within the 31-60 age group, consistent with COVID-19's general demographic impact. Male predominance (63%) was notable, echoing global trends in COVID-19 infection rates. However, specific gender-related differences in ENT symptoms warrant further investigation, as suggested by Dell' Era et al. (2020) whose study had median age of 50 years old, 54% male representation.⁽¹⁶⁾

Diabetes emerged as a significant comorbidity (63%) in our study correlating with increased risk for severe COVID-19 outcomes and complications like mucormycosis. Sharma et al stated that mucormycosis targets the immunocompromised high-risk patients and the trilogy of SARS-CoV-2, DM, and prolonged hospital stay are the major culprits for the rapid upsurge in Mucormycosis infections worldwide. Understanding these associations is critical for tailoring management strategies and improving outcomes in diabetic COVID-19 patients.⁽¹⁷⁾

Clinical Management Considerations

The study also explored treatment modalities during the acute phase of COVID-19, noting that 53% of participants received steroid-based therapies. This aligned with the treatment guidelines for managing COVID-19-associated inflammation and respiratory distress. Hamed et al concluded that appropriate patient assessment, rapid diagnosis, and selection of appropriate treatment are important and lifesaving.⁽¹⁸⁾

Oxygen requirement during acute infection (44%) underscored the severity of respiratory involvement in a significant proportion of cases. This highlights the need for vigilant monitoring of respiratory and ENT sequelae post-recovery, as respiratory compromise during COVID-19 can contribute to ongoing ENT symptoms.

Implications For Public Health And Clinical Practice

The study's findings have several implications for public health and clinical practice. First, the high prevalence of ENT symptoms post-COVID-19 reinforces the importance of including ENT evaluations in comprehensive post-recovery assessments. Early recognition and management of these symptoms can mitigate long-term sequelae and improve patient outcomes, as emphasized by Borah et al⁽¹⁹⁾ and Gosavi et al.⁽⁶⁾

Second, the low vaccination uptake among participants (16%) highlights ongoing challenges in vaccine acceptance and accessibility. Increasing vaccination coverage remains paramount in preventing severe COVID-19 cases and reducing post-recovery complications, including ENT manifestations.

Limitations And Future Directions

Several limitations warrant consideration in interpreting the study's findings. The retrospective nature of data collection and reliance on patient-reported symptoms may introduce recall bias and limit the study's generalizability. Future prospective studies with larger sample sizes and longitudinal follow-up are needed to validate these findings and elucidate the long-term trajectory of ENT symptoms post-COVID-19.

Furthermore, exploring the impact of emerging variants of concern on ENT manifestations and response to vaccination warrants ongoing investigation. Variability in symptom presentation and severity across different viral strains could influence diagnostic and therapeutic strategies in clinical settings.

CONCLUSION

In conclusion, the study contributes valuable insights into the prevalence, characteristics, and influencing factors of ENT manifestations among post-COVID-19 patients. By highlighting the diverse clinical presentations and demographic associations of these symptoms, the findings underscore the importance of comprehensive post-recovery care. Integrating ENT evaluations into routine follow-up protocols and enhancing vaccination efforts are crucial steps in mitigating COVID-19-related complications and improving overall patient outcomes.

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