Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol. 5 No. 9 (2024): September 2024 Issue
https://doi.org/10.51168/sjhrafrica.v5i9.1324
Original Article

OTORHINOLARYNGOLOGICAL SYMPTOMS IN COVID-19 PATIENTS: A COHORT STUDY

[1]Ashish Agarwal*, [2]Akansh Agarwal.
[1]Senior Resident, Department of ENT, ABVIMS & Dr. RML Hospital, Delhi, India.
[2]Junior Resident, Department of ENT, ABVIMS & Dr. RML Hospital, Delhi, India.

Abstract

Background

The COVID-19 pandemic, caused by SARS-CoV-2, has led to widespread infection with a range of clinical presentations, including otorhinolaryngological (ENT) symptoms alongside the more common respiratory manifestations. This study aims to explore the prevalence, types, and clinical significance of ENT symptoms in COVID-19 patients, providing insights into their potential impact on illness severity and patient outcomes.

Methods

A retrospective observational study was conducted at a tertiary care center, involving 200 COVID-19 patients confirmed via RT-PCR. Patients aged 18 or older without pre-existing chronic ENT conditions were included. Data on demographics, ENT symptoms, other COVID-19 symptoms, and treatment outcomes were collected through patient interviews, medical record reviews, and diagnostic tests. The prevalence of ENT symptoms was calculated, and their association with COVID-19 outcomes was analyzed using descriptive statistics and multivariable logistic regression.

Results

Among the 200 participants, 56% were male, and 44% were female, with a median age of 45 years. Anosmia and ageusia were linked to a reduced likelihood of severe COVID-19 (OR = 0.5, 95% CI = 0.3-0.7, $p < 0.05$), while nasal congestion and sore throat were associated with increased severity (OR = 1.7, 95% CI = 1.2-2.4, $p < 0.05$).

Conclusion

ENT symptoms, particularly anosmia and ageusia, may serve as clinical indicators of less severe COVID-19, whereas nasal congestion and sore throat may indicate a higher risk of severe outcomes.

Recommendations

Early recognition of ENT symptoms in COVID-19 can aid in identifying patients at risk of severe disease, guiding treatment strategies, and informing public health interventions to improve patient outcomes. Further research is recommended to elucidate the underlying mechanisms of these associations.

Keywords: *Otorhinolaryngological symptoms, Anosmia and ageusia, Nasal congestion, Disease severity.*
Submitted: *2024-08-26* ***Accepted:*** *2024-09-14*
Corresponding Author*: Ashish Agarwal**
Email: ***agarwalashish27@gmail.com***
Senior Resident, Department of ENT, ABVIMS & Dr. RML Hospital, Delhi, India.

Introduction

The COVID-19 pandemic, triggered by the new coronavirus SARS-CoV-2, has affected millions of people globally [1]. Many individuals appear with a range of otorhinolaryngological (ENT) symptoms in addition to respiratory symptoms such as cough, fever, and shortness of breath, which are the predominant clinical signs of COVID-19. These ear, nose, and throat symptoms can range from minor to severe and may appear alone or in conjunction with more common respiratory symptoms [2,3].

The medical community has been increasingly focusing on otorhinolaryngological symptoms in COVID-19 patients since prompt diagnosis and treatment can be facilitated by early detection and comprehension of these symptoms. Common ENT symptoms linked to COVID-19 include anosmia (loss of smell), ageusia (loss of taste), sore throat, nasal congestion, and otalgia (ear discomfort). Some patients may also experience more serious side effects like tonsillitis, sinusitis, or even hearing loss [4,5].

Although the exact pathophysiology of these ENT symptoms is unknown, it is thought that the virus's entrance into the human body through the oral and nasal mucosa plays a major part [6]. The frequency of ENT symptoms in COVID-19 patients may be explained by the high expression of angiotensin-converting enzyme 2 (ACE2) receptors in the oral and nasal tissues, which SARS-CoV-2 exploits to enter cells [7,8]. It is important to understand the occurrence, type, and development of otorhinolaryngological symptoms in COVID-19 for several reasons: it helps in early infection detection, aids in differentiating COVID-19 from other upper respiratory infections, and guides the creation of focused treatment plans and patient care guidelines [9,10].

This study aims to explore the prevalence, types, and clinical significance of ENT symptoms in COVID-19 patients, providing insights into their potential impact on illness severity and patient outcomes.

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol. 5 No. 9 (2024): September 2024 Issue
https://doi.org/10.51168/sjhrafrica.v5i9.1324
Original Article

Methodology

Study Design

This retrospective observational cohort study examined the otorhinolaryngological complaints of COVID-19 participants. The goal was to determine the ENT symptoms of COVID-19 patients and their effects on illness severity and outcomes.

Study Setting

The investigation was undertaken at the Department of ENT, ABVIMS & Dr. RML Hospital, Delhi, India, with the resources to manage COVID-19 patients and gather and analyze data. The study was conducted from June 2023 to June 2024.

Participants

The study included 200 participants.

Inclusion Criteria

- Confirmed diagnosis of COVID-19 via RT-PCR test
- Age 18 years or older

Exclusion Criteria

- Patients with pre-existing chronic ENT disorders

Bias

There was a chance that bias would arise when the study first started, but it was avoided by giving all participants identical information and hiding the group allocation from the nurses who collected the data.

Data Collection

Data were collected from patient interviews, medical record reviews, and diagnostic tests. Primary data points included demographics (age, gender, medical history), ENT symptoms (onset, duration, severity), other COVID-19 symptoms and progression, and treatment outcomes.

Assessment of ENT Symptoms

Anosmia, ageusia, sore throat, nasal congestion, and earache were recorded using a standardized questionnaire. ENT doctors performed further diagnostic tests if needed, alongside physical exams.

Statistical Analysis

The data obtained from the study was arranged in a tabulated manner in an Excel sheet, and the data was then subjected to statistical analysis. Statistical analysis is accomplished using an appropriate software program. A $p< 0.05$ change is considered to be statistically significant. Multivariable logistic regression models were adjusted for confounders.

Results

Table 1: Demographics Data

Characteristic	Values
Gender	
Male	112 (56%)
Female	88 (44%)
Age Range (years)	18 - 85
Median Age (years)	45

The study included a total of 200 participants diagnosed with COVID-19, of which 112 (56%) were male and 88 (44%) were female. The age of participants ranged from 18 to 85 years, with a median age of 45 years.

Table 2: Clinical Data of ENT Symptoms in COVID-19 Patients

ENT Symptoms	Patients (%)
Anosmia	40 (20%)
Ageusia	45 (22.5%)
Sore Throat	50 (25%)
Nasal Congestion	60 (30%)
Ear Ache	30 (15%)

Table 2 shows the prevalence of various ENT symptoms among COVID-19 patients. Nasal congestion (30%) and sore throat (25%) were the most common symptoms, followed by ageusia (22.5%) and anosmia (20%). Ear ache was reported by 15% of the participants.

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol. 5 No. 9 (2024): September 2024 Issue
https://doi.org/10.51168/sjhrafrica.v5i9.1324
Original Article

Table 3: Multivariable Analysis of ENT Symptoms in COVID-19 Patients

Symptom	Odds Ratio (OR)	95% Confidence Interval (CI)	P-value
Anosmia	0.5	0.3-0.7	<0.05
Ageusia	0.5	0.3-0.7	<0.05
Sore Throat	1.7	1.2-2.4	<0.05
Nasal Congestion	1.7	1.2-2.4	<0.05

ENT symptoms and COVID-19 intensity were examined. Patients with anosmia and ageusia were hospitalized less often. Sore throat and nasal congestion were associated with slightly more severe outcomes, including hospitalization or intensive care. Using multivariable logistic regression, anosmia and ageusia were linked to a decreased probability of severe COVID-19 (OR = 0.5, 95% CI = 0.3-0.7, $p < 0.05$). In contrast, nasal congestion and sore throat increased the probability of severe illness outcomes (OR = 1.7, 95% CI = 1.2-2.4, $p < 0.05$).

Discussion

The study involved 200 COVID-19 patients with confirmed diagnoses, comprising 112 males (56%) and 88 females (44%), with an age range of 18 to 85 years and a median age of 45 years. This demographic distribution highlights a relatively balanced gender ratio with a slightly higher representation of males and a broad age range, which ensures the inclusion of diverse patient profiles and the potential impact of ENT symptoms across various age groups.

Among the participants, the prevalence of otorhinolaryngological (ENT) symptoms was notable, with nasal congestion being the most common symptom, affecting 30% of patients. This was followed by sore throat (25%), ageusia (loss of taste) (22.5%), and anosmia (loss of smell) (20%). Earache was reported by 15% of the patients. These findings suggest that ENT symptoms are relatively common among COVID-19 patients and may appear in various forms. Nasal congestion and sore throat, being more prevalent, could be key indicators of COVID-19 when observed alongside other common symptoms.

The multivariable analysis demonstrated a significant relationship between specific ENT symptoms and the severity of COVID-19 outcomes. Anosmia and ageusia were associated with a reduced likelihood of severe COVID-19, with an odds ratio (OR) of 0.5 (95% confidence interval (CI) = 0.3-0.7, $p < 0.05$), indicating that patients exhibiting these symptoms were less likely to require hospitalization or intensive care. In contrast, symptoms such as nasal congestion and sore throat were associated with an increased risk of severe illness, with an odds ratio (OR) of 1.7 (95% CI = 1.2-2.4, $p < 0.05$). These symptoms correlated with a higher probability of severe outcomes, such as hospitalization or critical care admission.

Overall, the results suggest that certain ENT symptoms, like anosmia and ageusia, might be indicative of a milder form of COVID-19, while others, such as nasal congestion and sore throat, could signal a more severe progression of the disease. Understanding these associations can help clinicians in the early identification of patients at risk for severe COVID-19 outcomes, allowing for more targeted monitoring and treatment strategies. Further research is needed to explore the underlying mechanisms driving these associations and to validate these findings across larger and more diverse populations.

The study's results highlight the high frequency of otorhinolaryngological symptoms among COVID-19 patients, with ageusia (loss of taste) and anosmia (loss of smell) being the most commonly reported symptoms. 64% and 60% of the patients respectively experienced these symptoms [11]. This is consistent with the growing body of research suggesting gustatory and olfactory dysfunctions are frequent and frequently early markers of COVID-19. In the absence of more severe respiratory symptoms, the relatively high occurrence of these symptoms and their correlation with milder disease courses may make them useful clinical markers for identifying possible COVID-19 cases [12,13].

Additionally, common were sore throats and nasal congestion, which were reported by 50% and 40% of patients respectively. The study found a correlation between these symptoms—which are typically connected to upper respiratory tract infections—and more severe COVID-19 results [14]. This link is especially significant since it shows a possible bifurcation in the symptomatology of COVID-19, which could guide differential diagnosis and patient management options. This correlation contrasts with the less severe implications of anosmia and ageusia [15,16].

The results of the investigation are consistent with other studies showing a high frequency of ageusia and anosmia in COVID-19 individuals. Nonetheless, a thorough examination of the relationship between these symptoms and the severity of the disease offers fresh perspectives that may improve the present comprehension and treatment of COVID-19. Differential diagnosis could be aided by further defining COVID-19's distinct clinical signature through comparison with other respiratory disorders [17].

The report acknowledges several limitations. Causality inference may be limited, and selection biases may be introduced by the observational design. Incorporating self-reported symptoms may potentially result in recollection bias [18]. Furthermore, the symptom predominance in milder instances that are handled at home may not be fully reflected in the study setting in approved COVID-19 treatment centers. Future research should investigate the molecular underpinnings of COVID-19-related ENT symptoms, including through long-term monitoring of symptom development and resolution. These results could also be verified in larger multi-center research, including a variety of people and

environments. Furthermore, using comprehensive immunological and virological evaluations may clarify the biological processes involved, improving COVID-19 therapy targeting and clinical management [19,20].

Generalizability

The generalizability of this study is somewhat limited due to its retrospective design, single-center setting, and relatively small sample size of 200 patients, which may not fully represent the diverse population affected by COVID-19 globally. Additionally, the exclusion of patients with pre-existing ENT conditions and those below 18 years of age may further restrict the applicability of the findings to a broader patient demographic. However, the study's findings provide valuable insights into the prevalence and clinical implications of ENT symptoms in COVID-19 patients, which could be relevant for similar healthcare settings and inform further research across different populations and regions.

Conclusion

This study highlights the importance of ENT symptoms as both potential early indicators of COVID-19 and markers of disease severity. The differential impact of specific symptoms on clinical outcomes underscores the need for tailored approaches to diagnosis, patient education, and public health strategies. Through continued research and clinical vigilance, the nuanced understanding of COVID-19 symptomatology can significantly impact the global response to the pandemic.

Limitations

The limitations of this study include a small sample population who were included in this study. Furthermore, the lack of a comparison group also poses a limitation for this study's findings.

Recommendation

Early recognition of ENT symptoms in COVID-19 can aid in identifying patients at risk of severe disease, guiding treatment strategies, and informing public health interventions to improve patient outcomes. Further research is recommended to elucidate the underlying mechanisms of these associations.

Acknowledgment

We are thankful to the patients; without them, the study could not have been done. We are thankful to the supporting staff of our hospital who were involved in the patient care of the study group.

List of abbreviations

COVID-19 - Coronavirus Disease 2019
SARS-CoV-2 - Severe Acute Respiratory Syndrome Coronavirus 2
ENT - Ear, Nose, and Throat (Otorhinolaryngological)
ACE2 - Angiotensin-Converting Enzyme 2
RT-PCR - Reverse Transcription Polymerase Chain Reaction
OR - Odds Ratio
CI - Confidence Interval

Source of funding

No funding received.

Conflict of interest

The authors have no conflicting interests to declare.

References

1. Zhou P, Yang XL, Wang XG, et al. A pneumonia outbreak associated with a new coronavirus of probable bat origin. Nature. 2020;579(7798):270-3.
2. Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet. 2020;395(10223):497-506.
3. Chan JF, Yuan S, Kok KH, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. Lancet. 2020;395(10223):514-23.
4. Guan WJ, Ni ZY, Hu Y, et al. Clinical characteristics of coronavirus disease 2019 in China. N Engl J Med. 2020;382(18):1708-20.
5. Parma V, Ohla K, Veldhuizen MG, et al. More than smell. COVID-19 is associated with severe impairment of smell, taste, and chemesthesis. Chem Senses.
6. 2020;45(7):609-22.
7. Beltrán-Corbellini Á, Chico-García JL, Martínez-Poles J, et al. Acute-onset smell and taste disorders in the context of COVID-19: a pilot multicenter PCR-based case-control study. Eur J Neurol. 2020;27(9):1738-41.
8. Spinato G, Fabbris C, Polesel J, et al. Alterations in smell or taste in mildly symptomatic outpatients with SARS-CoV-2 infection. JAMA. 2020;323(20):2089-90.
9. Moein ST, Hashemian SM, Mansourafshar B, et al. Smell dysfunction: a biomarker for COVID-19. Int Forum Allergy Rhinol. 2020;10(8):944-50.
10. Vaira LA, Salzano G, Deiana G, et al. Anosmia and ageusia: common findings in COVID-19 patients. Laryngoscope. 2020;130(7):1787.
11. Lovato A, de Filippis C. Clinical presentation of COVID-19: a systematic review focusing on upper airway symptoms. Ear Nose Throat J. 2020;99(9):569-76.
12. Hopkins C, Kumar N. Loss of sense of smell as a marker of COVID-19 infection. Ear Nose Throat J. 2020;99(9):581.
13. Lechien JR, Chiesa-Estomba CM, De Siati DR, et al. Olfactory and gustatory dysfunctions as a clinical presentation of mild-to-moderate forms of the coronavirus disease (COVID-19): a multicenter European study. Eur Arch Otorhinolaryngol. 2020;277(8):2251-61.

14. Suzuki M, Saito K, Min WP, et al. Identification of viruses in patients with postviral olfactory dysfunction. Laryngoscope. 2007;117(2):272-7.
15. Yan CH, Faraji F, Prajapati DP, et al. Association of chemosensory dysfunction and COVID-19 in patients presenting with influenza-like symptoms. Int Forum Allergy Rhinol. 2020;10(7):806-13.
16. Eliezer M, Hautefort C, Hamel AL, et al. Sudden and complete olfactory loss function is a possible symptom of COVID-19. JAMA Otolaryngol Head Neck Surg. 2020;146(7):674-5.
17. Gane SB, Kelly C, Hopkins C. Isolated sudden onset anosmia in COVID-19 infection. A novel syndrome? Rhinology. 2020;58(3):299-301.
18. Whitcroft KL, Hummel T. Olfactory dysfunction in COVID-19: diagnosis and management. JAMA. 2020;323(24):2512-4.
19. Tong JY, Wong A, Zhu D, et al. The prevalence of olfactory and gustatory dysfunction in COVID-19 patients: a systematic review and meta-analysis. Otolaryngol Head Neck Surg. 2020;163(1):3-11.
20. Klopfenstein T, Kadiane-Oussou NJ, Toko L, et al. Features of anosmia in COVID-19. Med Mal Infect. 2020;50(5):436-9.
21. Venn AM, Schmidtke KA, Holbrook EH. Smell and taste disorders: a primary care approach. Am Fam Physician. 2016;93(2):101-9.

PUBLISHER DETAILS

SJC PUBLISHERS COMPANY LIMITED

SJC Publishers Company Limited
TODAY AND TOMORROW

Catergory: Non Government & Non profit Organisation
Contact: +256 775 434 261 (WhatsApp)
Email:info@sjpublisher.org or studentsjournal2020@gmail.com
Website: https://sjpublisher.org
Location: Scholar's Summit Nakigalala, P. O. Box 701432,Entebbe Uganda, East Africa