

Anosmia and Ageusia in Covid-19 Patients

Farheen Khan⁽¹⁾, Virendra Pal Singh⁽²⁾, Nikunj Jain⁽³⁾, Amit Kumar⁽⁴⁾, Shravan Kumar Vishwakarma⁽⁵⁾

Junior Resident^(1,4,5), Professor⁽²⁾, Assistant Professor⁽³⁾ Department of ENT, LLRM Medical College, Meerut.

Abstract:

At the end of 2019 in Wuhan, China, A novel coronavirus, severe acute respiratory syndrome coronavirus-2(SARS-CoV 2) was considered a cause of number of lower respiratory tract infections. However, SARS-CoV 2 also causes upper respiratory tract related symptoms. Aim of this study was to observe the development of olfactory and gustatory dysfunctions, to detect other ENT manifestations in COVID-19 patients, to study the association of anosmia and ageusia with smoking and to assess the patients for recovery of sense of smell. This study was conducted on 104 patients from October 2020 to December 2020, in LLRM Medical College, Meerut. Of all the patients 78 were symptomatic and 26 patients were totally asymptomatic. The prevalence of anosmia and ageusia was found to be 28.85% and 23.08% respectively. Association of anosmia and ageusia with smoking was statistically insignificant. Majority of patients recovered their sense of smell within 1–2 weeks from the day of onset.

Keywords: COVID-19, Anosmia, Ageusia

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I. Introduction

The 2019 novel coronavirus disease (COVID-19) is a highly contagious zoonosis produced by SARS-CoV-2 that spreads from human-to-human by respiratory secretions^[1]. It was declared by the WHO as a public health emergency. The available data on the ear, nose, throat (ENT) manifestations of COVID-19 is sparsely published. Anosmia and ageusia are not common as fever and cough but in a number of patients affected by coronavirus these are being observed. The present study has been done with the objectives of detecting the prevalence of anosmia and Ageusia and other associated symptoms.

II. Aims & Objectives

1. To study the prevalence of anosmia and Ageusia.
2. To study other associated ENT symptoms.
3. To study the association of anosmia and ageusia with smoking.
4. To assess the anosmic patients for recovery of sense of smell.

III. Material and Methods

A Cross-sectional study was conducted among COVID positive patients admitted in COVID Isolation ward of LLRM Medical College, Meerut. Patients who were admitted and who fulfilled the inclusion criteria were included in this study. A total of 104 patients were included. Patients were interviewed for development of anosmia and ageusia and associated factors using a predesigned and pretested questionnaire. This study was approved by the institutional ethical committee.

Inclusion Criteria:

1. All COVID positive patients admitted in COVID isolation ward who gave informed consent.

Exclusion Criteria:

1. Patients who did not give informed and written consent.
2. Patients with olfactory or gustatory dysfunctions before the epidemic.
3. Patients who were in the intensive-care unit at the time of the study.

Statistical Analysis: The collected data was compiled and analysed using Epi Info software version 7.2.3.1. Percentages, p-values, chi-square tests were calculated. $p < 0.05$ was considered significant and $p < 0.01$ was considered highly significant.

IV. Results

The study was done on 104 admitted COVID positive patients at the COVID isolation ward of LLRM Medical College, Meerut, who gave informed consent. Of all the patients enrolled in the study 65 (62.5%) were male and 39(37.5%) were female and majority of them (40 out of 104) were in age group 25-44 years (38.46%) as shown in table-1 and 2.

Table-1: Distribution of Age groups

Age groups(in years)	Frequency(N=104)	Percentage
20-24 years	08	7.69%
25-44 years	40	38.46%
45-64 years	37	35.58%
65-79 years	17	16.35%
≥ 80 years	2	1.92%
Total	104	100%

Table-2: Distribution of Gender

Gender	Frequency (N=104)	Percentage
Male	65	62.50%
Female	39	37.50%
Total	104	100%

Table-3: Prevalence of Anosmia and Ageusia in COVID Positive patients(Multiple Response)

	Frequency	Percentage
Anosmia	30	28.85%
Ageusia	24	23.08
Base = 104		

Of all the patients 78 were symptomatic whereas 26 patients (25%) were found to be totally asymptomatic. Table-3 shows that the prevalence of anosmia and ageusia was found to be 28.85% and 23.08% respectively in COVID positive patients. However, 12 (15.38%) patients out of symptomatic subjects had both olfactory as well as gustatory dysfunction

Table-4: Prevalence of Other ENT manifestations(Multiple Response)

ENT manifestations	Frequency	Percentage
Sore throat	36	34.62%
Cough	50	48.08%
Nasal discharge	14	13.46%
Nasal Congestion	20	19.23%
Post nasal drip	5	4.81%
Epistaxis	1	0.96%
Base = 104		

Cough (48.08%) was the most common symptom found in COVID patients, followed by sore throat (34.62%), nasal congestion (19.23%), nasal discharge (13.46%) and Post nasal drip(4.81%). Epistaxis (0.96%) was the least reported symptom in the study subjects, as shown in table-4.

Table- 5: Distribution and Association of Smoking with Anosmia

Smoking	Total		Anosmia				p-value χ^2 , df
			Present		Absent		
	No.	%	No.	%	No.	%	x ² =0.09 p-value>0.05
Smoker	30	28.85	8	26.67	22	73.33	
Non-smoker	74	71.15	22	29.73	52	70.27	
Total	104	100	30	28.85	74	71.15	

Table-5 shows that Anosmia was present in 29.73% of the non-smokers and 26.67% of the smokers. However, the association between anosmia and smoking was found to be statistically insignificant.

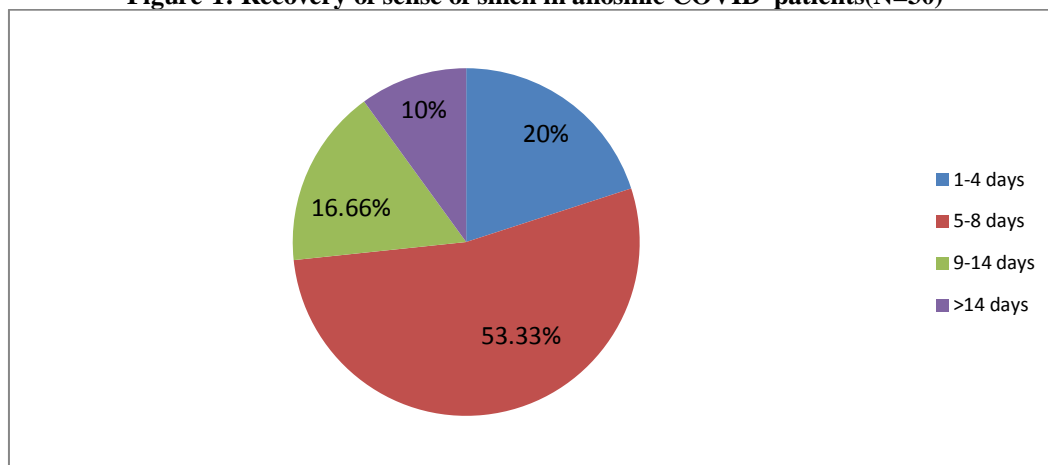
Table- 6: Distribution and Association of Smoking with Ageusia

Smoking	Total		Ageusia				p-value χ^2 , df
			Present		Absent		
	No.	%	No.	%	No.	%	x ² =0.001 p-value>0.05
Smoker	30	28.85	7	23.33	23	76.67	
Non-smoker	74	71.15	17	22.97	57	77.03	

Total	104	100	24	23.08	80	76.92	
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Table-6 shows that Ageusia was present in 22.97% of the non-smokers and 23.33% of the smokers. However, the association between anosmia and smoking was found to be statistically insignificant.

Figure-1: Recovery of sense of smell in anosmic COVID patients(N=30)



Mostly patients recovered their sense of smell within 1–2 weeks from the day of onset of anosmia, as shown in figure-1.

V. Discussion

Wide range of viral infections are associated with olfactory and gustatory disorders. However, Coronavirus binds on angiotensin converting enzyme 2 (ACE-2) receptor and penetrate into the cell. This ACE-2 receptor is widely expressed on the epithelial cells of the mucosa of the oral and nasal cavity which explains the underlying pathogenesis for gustatory and olfactory dysfunction in SARS-CoV-2 infection^[2,3]. According to the clinical studies across the world, fever, cough, dyspnea, sputum production, myalgia, arthralgia, headache, diarrhea, rhinorrhea, and sore throat are the most prevalent symptoms^[4,5].

VI. Conclusion and Recommendations

In patients having anosmia and ageusia, the diagnosis of COVID-19 could be missed, because these symptoms were not known to be specific. It is currently suspected that the neuroinvasive potential of SARS-CoV2 plays a key role in the respiratory failure of COVID-19 patients^[6]. SARS-CoV has demonstrated in a mice model a transneuronal penetration through the olfactory bulb^[7]. Medical imaging and neuropathology will certainly play an important role to detect abnormalities in olfactory bulb, cranial nerves, and brain of COVID-19 patients.

Conflict of interest: None

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