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Anosmia with or without Ageusia as a Presenting Symptom in COVID-19 Positive Patients: A Single Center Study at Dhaka in Bangladesh

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Abstract

Background: The loss of smell and taste in COVID-19 patients is now acknowledged as one of the disease's primary symptoms. **Objective:** The aim of this study was to investigate the incidence of loss of smell and taste in outpatients and hospitalized patients with SARS-CoV-2 infection that RT-PCR had confirmed. **Methodology:** This cross-sectional study was conducted in the in the Novus Molecular Lab, Dhaka between 5 June 2021 and 17 July 2021]. COVID-19 patients were included in this study who become RT-PCR positive in nasopharyngeal and oropharyngeal swabs in a single center. All of them were interviewed by a structured questionnaire over the phone. **Results:** Among 200 COVID-19-positive patients smell and taste dysfunction appeared among 75(37.5%) patients. Only smell dysfunction occurred in 57.0% of patients, and taste dysfunction appears in 34.0% patients, and both symptoms were present among 9.0% of patients with or without other symptoms of COVID-19. The smell and taste recovery time was distributed as 63.0% recovered within less than a week, 20.0% within 2 weeks, and 17.0% in 2 weeks. **Conclusion:** In conclusion significant number of COVID-19 patients are presented with loss of smell and taste. [*Bangladesh Journal of Infectious Diseases, June 2021;8(1):32-35]*

Keywords: Anosmia; ageusia; COVID-19 positive patients; Presenting Symptom

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Introduction

Presentation of COVID-19 sometimes may be as asymptomatic, mild upper respiratory tract infection or severe systemic disease[1]. Sudden olfactory dysfunction (anosmia or ageusia) has been observed in many cases with presence or absence of other general symptoms of COVID-19 infection. Recently this is seen which seems to early identification of patients with COVID-19[2]. The exact mechanism of anosmia or ageusia is still unclear. It is suggested that angiotensin-converting enzyme 2 (ACE2) receptor is used by COVID-19[3]. In the respiratory system, ACE2 is mainly expressed on type II alveolar epithelial cells, but in the epithelial cells of the oral and nasal mucosa and nasopharynx are also expressed but weakly, which indicates that primary target of SARS-CoV-2 is the lungs[4]. ACE2 is distributed all over the oral and also nasal cavities, especially on the tongue, where it plays a part in the sense of taste. The Expression of ACE2 was detected in a small proportion of type III taste cells. Wang Z proved that nongustatory papilla epithelial cells are the prime targets for SARS-CoV-2 infection in the tongue; thus, taste loss in COVID-19 patients is likely not caused by a direct infection of SARS-CoV-2 to taste bud cells[5].

Olfactory dysfunction (OD) is common ENT disease after many viral infections, which can cause OD by inflammation in the sinonasal mucosa and runny nose, with rhinovirus, parainfluenza Epstein-Barr virus, and some coronavirus being the most common viruses[3].

In Bangladesh, the COVID-19 affected the public life, as in all other affected countries, and since the pandemic's second wave, there was an increase in the reported cases of taste and smell loss in hospitals and private clinics[1]. Thus, in this study we were investigated the incidence of anosmia and ageusia as a presenting symptom of coronavirus disease in a single center for the Bangladeshi patients.

Methodology

This cross-sectional study was conducted in the Novus Molecular Lab, Dhaka from between 5 June 2021 and 17 July 2021. Patients with real time polymerase chain reaction (RT PCR) positive nasopharyngeal and oropharyngeal swabs, (positive for COVID-19) were the study population. We enrolled preliminary two hundred patients, all COVID-19 positive between 5 June 2021 and 17 July 2021. Then we interviewed them by a structured questionnaire over phone. The real time PCR of the nasopharyngeal and oropharyngeal swabs for the detection of SARS COVID-19 is done in our center and worldwide, and they were subjected to only telephonic interviews and therefore no ethical consideration is involved in this study. Inclusion criteria were patients who are laboratory proven SARS-CoV-2 infection, above 18 years who give informed consent to participate in the study. Exclusion criteria were, patients who did not give consent to take part, subjects with incomplete data, previous olfactory dysfunction (not responding to 2 telephone calls) were excluded. Statistical analysis was performed using the SPSS statistical software (version 25; IBM). Qualitative variables are expressed as percentages and quantitative variables as means, standard deviation (SD), and range.

Results

Among two hundred COVID-19-positive patients, 133 males (66.50%) and 69 females (34.50 %), average age 41.5 years (Table 1). Smell and taste dysfunction appeared among 75 (37.5%) patients. Among them 65% are male and 35% are female. Only smell dysfunction appeared in 57% patients and taste dysfunction appeared with 34% patients and both symptoms were present among 9% patients with or without other symptoms of COVID-19 (Figure 1). All these 75/200 (37.5%) patients confirmed that they had no symptoms other than loss of sense of smell and taste before they were tested for COVID-19. The most common complaints were fatigue (68%), high temperature (57%), myalgia (49%), headache (44 %), dry cough (40%), dyspnea (33%), diarrhea (17%), and nausea or vomiting (12%) (Table 1).

Table 1: General Symptoms of Coronavirus Disease 2019 in the Study Population (n=75)

Variables	Percent
Gender	
• Male	65.0
• Female	35.0
General Symptoms at Disease Onset	
• Fever	40.0
• Dry cough	30.0
• Fatigue	51.0
• Headache	43.0
• Myalgia or arthralgia	37.0
• Diarrhea	13.9
• Nausea or vomiting	9.0
• Dyspnea	39.0

Anosmia was mild in 9/25 patients, moderate 9/25 (18.97%) and 7/25 (20.51%) had complete anosmia. Ageusia was mild in 2/7 (28%) patients, moderate 1/7 (14%) and 4/7 (57%) had complete anosmia. Both symptoms were mild in 5/43 (11%) patients, moderate 7/43 (16%) and 31/43 (72%) had complete anosmia (Table 2).

Table 2: Anosmia and Ageusia severity

Symptoms	Severity		
	Mild	Moderate	Severe
Only Anosmia	9	9	7
Only Ageusia	2	1	4
Both Symptoms	5	7	31

Among the positive cases anosmia was present among 20 males and 5 females and ageusia was present among 6 males and 1 female. 20/25 (80%) were males and 5/25 (20%) females. Again 6/7 (85%) were males and 1/7 (15%) females. 37/43 (86%) were males and 6/43 (14%) females (Table 3).

Table 3: Anosmia and Ageusia and gender distribution

Variables	Male	Female	P value
Anosmia	20	5	<0.05
Ageusia	6	1	<0.05
Both	37	6	<0.05

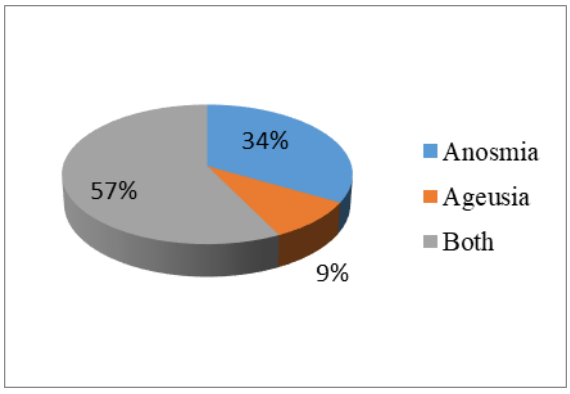

Figure I: Percentage of Anosmia and Ageusia among the COVID 19 positive cases

Only Anosmia appeared in 57% patients and Ageusia appeared with 34% patients and both symptoms were present among 9% patients with or without other symptoms of COVID-19 (Table I).

The time for smell and taste recovery distributed as 63% recovered within less than a week, 20 % within 2 weeks, and 17% in 2 weeks (Figure II).

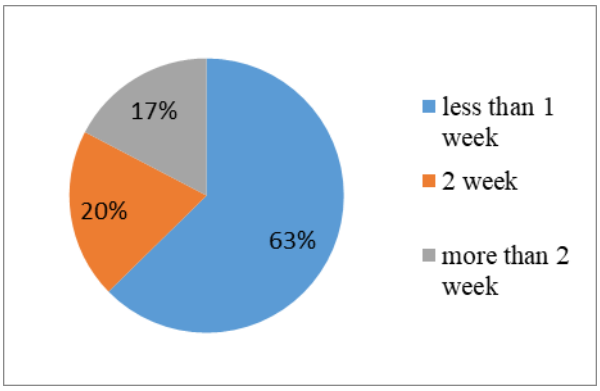

Figure II: Recovery time from Anosmia and Ageusia among the COVID 19 positive cases

The predominant sufferer age group was 31 to 40 years where 44.0% was affected followed by 21 to 30 years' age group, in this group 37.0% was affected (Figure III).

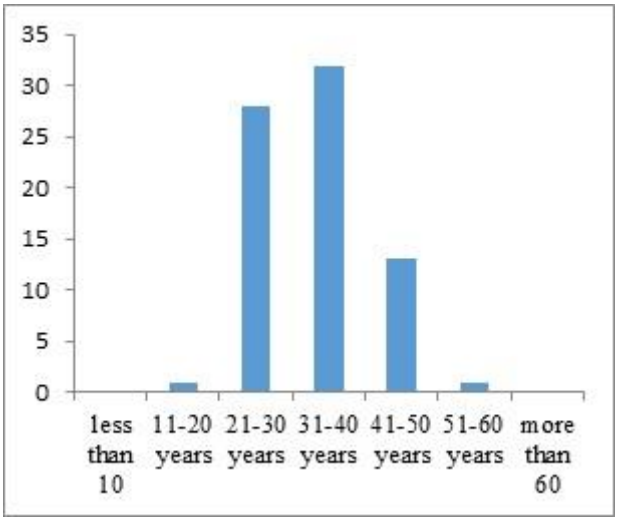

Figure III: Age group distribution of cases who had Anosmia and Ageusia

Discussion

Loss of smell is common in case of viral infections[6]. Over the last 2 months, an increase of sudden anosmia incidence, with or without taste loss, was reported[1]. From last few months, many articles were published discussed the lack of sense of smell and taste in patients with COVID-19, all of which stated that olfactory dysfunction could occur at a very early stage of the disease prior to diagnosis confirmation by a polymerase chain reaction test[3].

Some studies have shown that males are more prone to loss of taste and smell sensation than females[7]. Our study showed that young adults presented extreme declination in smell and taste sensations, with more significant declination shown in

individuals in their late 30s. Similar results were presented by Lee et al., who found that more significant changes were recorded among the young population[2,8]. In this study, most of the participants were symptomatic (52.0%), however, some asymptomatic cases also there. In this study, smell and taste dysfunction appeared in significant amount of the COVID-19 patients, 57.0% of patients had smell dysfunction and 34.0% had taste dysfunction and 9% had both dysfunctions. Tong et al. reported 52.7% prevalence rate of olfactory dysfunction in COVID-19 patients[9].

Most of the cases reported the loss of smell or taste as the first symptom, while few patients reported fever as first complaint and some had a history of contact with COVID-19 patient, and when it comes for the symptoms questionnaire. In the current analysis, 63.0% patients recorded complete smell and taste improvement within 1 weeks before or after recovery from COVID-19 symptoms. 20.0% regained within 2 weeks and 17.0% cases it takes more than 2 weeks.

Male gender was more affected in this study. However, other studies reported female gender percentage[1,10]. Most cases were mild, followed by moderate, then total anosmia and or taste loss. The age group distribution suffered from this smell and taste dysfunctions were 31 to 40 years age group followed by 21 to 30 years age group. Most of the patients had fatigue and headache followed by fever and dry cough. We found no statistically significant differences in the duration of anosmia between participants with and without PCR results.

Though assessing smell and taste dysfunction by a questionnaire over phone call has a limitation and might lead to overestimation by the participants but in the context of a pandemic, we have to do it.

Conclusions

Due to novel and complex characteristics of SARS-CoV-2 and different clinical presentations of COVID-19, many questions remain unanswered. These findings show that significant amount of smell and taste disorders among Bangladeshi patients with COVID-19 at the end of second wave. Sudden loss of smell and taste needs to give attention for early detection of COVID-19 infection to identify asymptomatic carriers. It will help early isolation and will restrict the spread of the disease.

Reference

1. Al-Zaidi HM, Badr HM. Incidence and recovery of smell and taste dysfunction in COVID-19 positive patients. The Egyptian Journal of Otolaryngology. 2020;36(1):1-6.
2. Mercante G, Ferreli F, de Virgilio A, et al. Prevalence of taste and smell dysfunction in coronavirus disease 2019. JAMA Otolaryngol - Head Neck Surg 2020;146(8):1–6
3. Al-Rawi NH, Sammouda AR, AlRahin EA, Al Ali FA, Al Arayedh GS, Daryanavard HA, et al. Prevalence of Anosmia or Ageusia in Patients with COVID-19 among United Arab Emirates Population. International Dental Journal. 2021 May 13.
4. Mercante G, Ferreli F, De Virgilio A, et al. Prevalence of Taste and Smell Dysfunction in Coronavirus Disease 2019. JAMA Otolaryngol Head Neck Surg. 2020;146(8):723–728
5. Wang Z, Zhou J, Marshall B, Rekaya R, Ye K, Liu HX. SARS-CoV-2 receptor ACE2 is enriched in a subpopulation of mouse tongue epithelial cells in nongustatory papillae but not in taste buds or embryonic oral epithelium. ACS pharmacology & translational science. 20203(4):749-58.
6. Wang Z, Zhou J, Marshall B, Rekaya R, Ye K, Liu HX. SARS-CoV-2 receptor ACE2 is enriched in a subpopulation of mouse tongue epithelial cells in nongustatory papillae but not in taste buds or embryonic oral epithelium. ACS pharmacology & translational science. 2020 Jul 23;3(4):749-58.
7. Vaira LA, Deiana G, Fois AG, et al. Objective evaluation of anosmia and ageusia in COVID-19 patients: single-center experience on 72 cases. Head and Neck 2020;42(6):1252–8
8. Lee Y, Min P, Lee S, Kim SW. Prevalence and duration of acute loss of smell or taste in COVID-19 patients. J Korean Med Sci 2020;35(18):e174
9. Tong JY, Wong A, Zhu D, Fastenberg JH, Tham T. The prevalence of olfactory and gustatory dysfunction in COVID19patients: a systematic review and meta-analysis. Otolaryngol Neck Surg 2020;1:0194599820926473
10. Vaira LA, Hopkins C, Salzano G, Petrocelli M, Melis A, Cucurullo M, et al. Fiore V. Olfactory and gustatory function impairment in COVID-19 patients: Italian objective multicenter-study. Head & neck. 2020;42(7):1560-9