

Prevalence Of Anosmia And Dysgeusia In Patients Of COVID–19 In A Dedicated Covid Hospital

Dr.Vivek Kumar Pathak (✉ drvkp83@gmail.com)

School of medical sciences and research Sharda university <https://orcid.org/0000-0002-7251-4364>

Dr.Rohit Saxena

School of medical sciences and research Sharda university

Dr.Pradeepti Nayak

School of medical sciences and research Sharda university

Dr.rohit chaudhary

School of medical sciences and research Sharda university

Dr.Sonali tyagi

School of medical sciences and research Sharda university

Dr.Rishita kalra

School of medical sciences and research Sharda university

Dr.Sama rizvi

School of medical sciences and research Sharda university

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Abstract

Over the course of a few short months COVID 19 has become a major world-wide concern, in terms of its medical, social, economic and political impact on society. A thorough knowledge of its etiopathogenesis and manifestations is essential to tackle its spread and provide adequate patient care. In view of understanding the symptoms of this critical disease, we have conducted this study to evaluate the prevalence of otorhinolaryngological symptoms of dysgeusia and anosmia in patients afflicted by COVID-19

Introduction

COVID 19 is a novel viral respiratory disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It was discovered at the end of 2019 in the city of Wuhan in the Hubei Province of China^[1]. It is extremely infectious with a high rate of human to human transmission. It may present with mild or no symptoms in majority of the cases. Due to this it has spread rapidly throughout the world and become a global concern in an alarmingly brief period of time. On March 11th, 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic.

COVID 19 usually presents with 'flu-like-symptoms' including cough, sore throat, fever with associated systemic manifestations like myalgia, headache and fatigue. It may cause difficulty breathing, severe respiratory failure, ARDS and even death in some cases. Loss of sensation of smell and taste has recently been discovered to be the presenting and sometimes the only symptom in a majority of subsequently confirmed COVID 19 cases^[2]. Anosmia and dysgeusia in the absence of other respiratory diseases such as allergic rhinitis and acute or chronic rhinosinusitis should alert clinicians to the possibility of COVID-19 infection and substantiate the need for serious consideration for isolation and testing of these individuals^[3].

Given the state of urgency and scale of the current pandemic combined with our lack knowledge regarding the exact pathology of the disease, a comprehensive knowledge of the symptoms and presentation is imperative for prompt diagnosis, subsequent management of the disease and appropriate vigilance for viral spread in the community. It may differ from population to population due to difference in ethnicity, socio-economic status, demography and inherent immunity. Being a novel disease there needs to at least be a clear understanding of the symptomatology especially those that may go unnoticed. These apparently asymptomatic cases presenting with loss of sensation of smell and taste need to be evaluated immediately to prevent misdiagnosis and spread of the disease. In this context, we performed an institutional cross-sectional observational study to further explore the prevalence of olfactory and gustatory dysfunction in COVID-19 patients.

Materials And Methods

This cross-sectional descriptive study was conducted by the department of otorhinolaryngology at a tertiary care hospital. A hundred confirmed COVID-19 patients were inducted into the study and their symptomatology evaluated. All 100 patients included in the study tested positive for SARS CoV-2 by RT PCR and were admitted for observation and quarantine at the hospital. Patients who were seriously ill, unconscious or had diseases that could have previously resulted in decreased sensation of smell and taste like allergic rhinitis and rhino-sinusitis were excluded from the study.

Appropriate informed consent was taken from the patients before their induction into the study and ethical clearance was taken from the ethical committee of the institute.

All confirmed patients of COVID-19 of all ages were included in the study. History was taken from all of them and the presence of symptoms was assessed with special emphasis on otorhinolaryngological symptoms of anosmia and dysgeusia.

The data collected was collated and analysed using Statistical Package for Social Sciences (SPSS 21.0). Categorical variables are presented in number and percentage (%) and continuous variables as mean \pm SD and median. Chi square test was used to evaluate the quantitative data and P value <0.05 was considered statistically significant.

Results

Of the 100 patients included in the study were 71 were male and 29 were female (Chart 1).

The age of the patients ranged from 13 years to 72 years with a mean of 40.17 ± 14.82 . (Table 1)

Table 1 - Age of the patients who tested positive for COVID-19

AGE RANGE (years)	NO. OF PATIENTS	MEAN AGE
		40.7 +/- 14.82
11-20	7	
21-30	25	
31-40	24	
41-50	19	
51-60	13	
61-70	10	
71-80	2	
TOTAL	100	

Of 100 patients 40 patients had dysgeusia of which 26 were males and 14 were females with a mean age of 39.4 ± 15.62 years (Chart 2). There was no statistically significant difference between males and females (P value - 0.28).

Anosmia was seen in 22 patients of which 13 were males and 9 were females with a mean age 38.04 ± 14.85 years (Chart 3). There was no statistically significant difference between males and females (P value - 0.163). 2 patients presented primarily with anosmia but were otherwise asymptomatic.

Discussion

COVID 19 is a pandemic that has radically altered the global health care scenario. This study was conducted to evaluate the prevalence of otorhinolaryngological symptoms of dysgeusia and anosmia in Indian population in an attempt to understand the symptomatology of COVID 19 as compared to patients elsewhere in the world.

Post-viral chemosensory dysfunction has been long confirmed in various viral illnesses. It forms a majority of the patients presenting with anosmia in clinical settings. These include over 200 different viruses that cause upper respiratory tract infections including rhinovirus, coronavirus, parainfluenza virus, adenovirus, Epstein-Barr virus, respiratory syncytial virus amongst others.^[4] It can therefore be theorized that patients infected by SARS CoV-2 will also present with anosmia and dysgeusia. This chemosensory alteration has been attributed to various factors including olfactory neuropathy, degeneration of olfactory neurons and in some cases conductive olfactory loss. In two thirds of the cases this reduction in sensation of smell is usually completely resolved.

The European Rhinology Society has reported that a significant number of the COVID-19 patients (20-60%) had loss of smell and that, in many, it occurred before other more frequently encountered symptoms

like cough/fever^[5]. It has been suggested by studies that these individuals could have been hidden carriers of SARS-CoV-2 as they did not meet the criteria for diagnosing COVID-19 previously.

Studies from and Italy have shown that a significant number of patients suffering from COVID-19 had hyposmia/anosmia.^[6] In Germany 2 in 3 confirmed cases were reported to have anosmia.^[7]

Based on the latest research, anosmia/hyposmia is seen to be more prevalent in COVID-19 patients in some American and European countries as compared to Asian countries.^[8] Lovato and de Filippis reviewed articles about the clinical presentation of COVID-19 in 1556 patients from China, with none exhibiting anosmia or hyposmia ^[9]. Mao et al. retrospectively evaluated the symptoms of 214 patients in Wuhan, China, and found that only 5.1% of the patients reported olfactory dysfunction ^[10]. South Korea has reports of 30% of infected individuals having developed hyposmia/anosmia.^[11]

In a systematic review and meta-analysis by Agyeman and Chin et al 41% and 38% of diagnostic-confirmed patients with COVID-19 infection presented with olfactory or gustatory dysfunctions, respectively. Increasing age correlated with lower prevalence of these symptoms. There was no significant difference in the prevalence of olfactory or gustatory dysfunction by gender.^[12]

In another systematic review and meta-analysis, of 10 studies, Tong et al found a prevalence of 52.73% of anosmia amongst patients with COVID-19. Nine studies were analyzed for dysgeusia (n = 1390), demonstrating a prevalence of 43.93%. ^[13]

Spinato et al in their study found that 130 of 202 confirmed COVID-19 patients (64.4%) reported alterations in smell or taste. ^[14]. Sayin et al conducted a comparative study in 128 patients divided into two groups, those that tested positive for COVID-19 and those who tested negative. There was a significant difference in the rates of smell and taste impairment between the two groups (71.9% for the COVID-19-positive group and 26.6% for the COVID-19-negative group (P = .001). The rates of hyposmia/parosmia and hypogeusia/dysgeusia were found to be significantly higher in the COVID-19-positive group.^[15]

Yan et al evaluated 59 COVID-19-positive patients and 203 COVID-19-negative patients in their study. Loss of smell and taste were reported in 68% and 71% of COVID-19-positive subjects, respectively, compared to 16% and 17% of COVID-19-negative patients ($p < 0.001$). ^[16]

In an aggregate analysis of 28 articles related to COVID-19, SARS-CoV-2, SARS-CoV-1, MERS-CoV, and other coronaviruses Lehrich et al demonstrated an incidence of 49.6%, 47.9% and 17.9% for loss of smell, loss of taste and loss of either, respectively, in patients infected with SARS-CoV-2. Additionally, there were significantly higher incidences of runny nose/rhinorrhea/rhinitis and nasal congestion/obstruction/blockage in other coronaviruses as compared with SARS-CoV-2 ($P < .001$).^[17]

Leichen et al found that amongst 417 mild to moderate COVID-19 patients, 85.6% and 88.0% of patients reported olfactory and gustatory dysfunctions, respectively ^[18]

In our study 22% of the patients presented with anosmia and 40 % of the patients presented with dysgeusia. Most other studies have established a female preponderance when it comes to chemosensory dysfunction. However in our study there was no significant difference between males and females with respect to prevalence of olfactory or gustatory dysfunction.

Conclusion

Our study supports other studies done in Asian populations which show that anosmia and dysgeusia are not as highly prevalent in COVID-19 patients as in some European and American countries.

As anosmia and dysgeusia are seen a fair proportion of COVID-19 patients, their relevance and importance should not be disregarded with reference to diagnosis and management. It has been reported in many current studies that patients presenting with decreased sensation of smell have better prognosis. Also, despite them not being a major criteria for diagnosis of COVID -19 in a patient, in a few patients they may present primarily and should warrant immediate evaluation and testing.

Declarations

Competing interests: The authors declare no competing interests

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Figures

Gender Predisposition in COVID -19

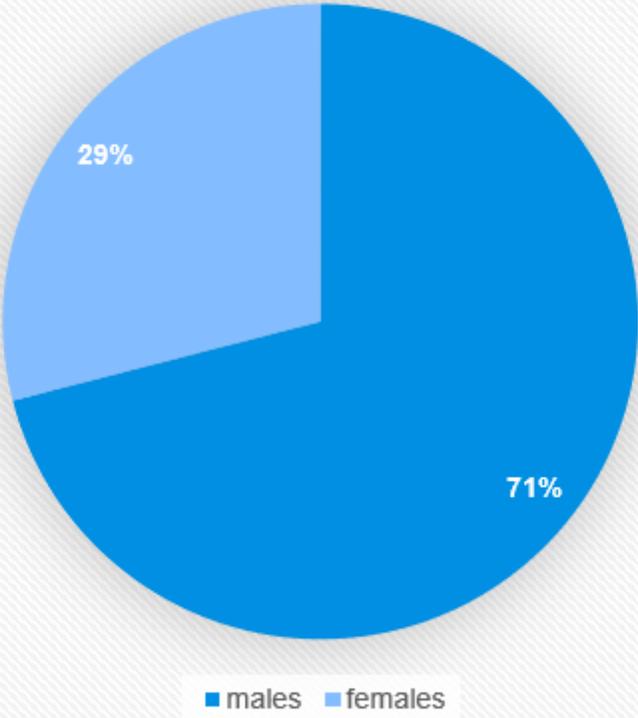


Figure 1

Chart 1 - Gender predisposition in COVID-19 patients

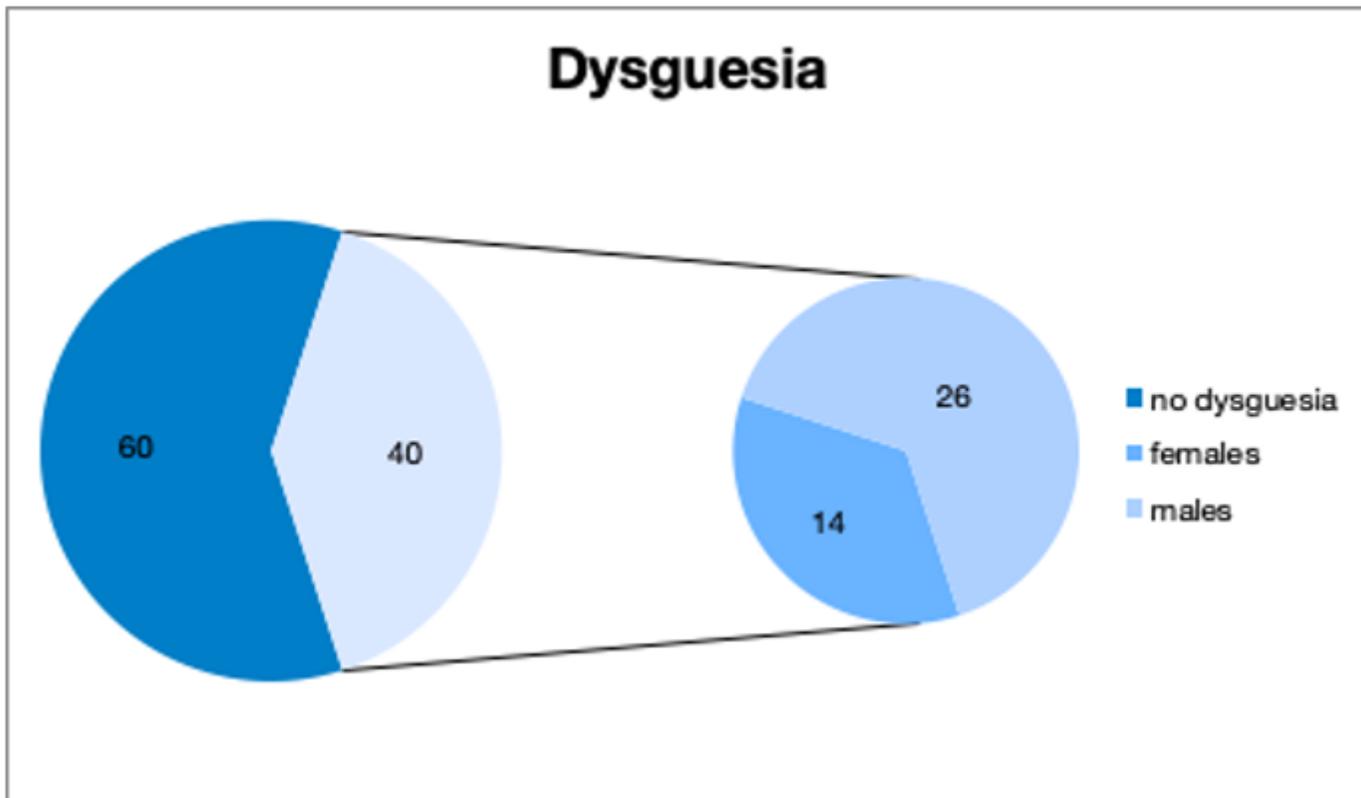


Figure 2

Chart 2 - Distribution of the patients of COVID -19 with Dysguesia

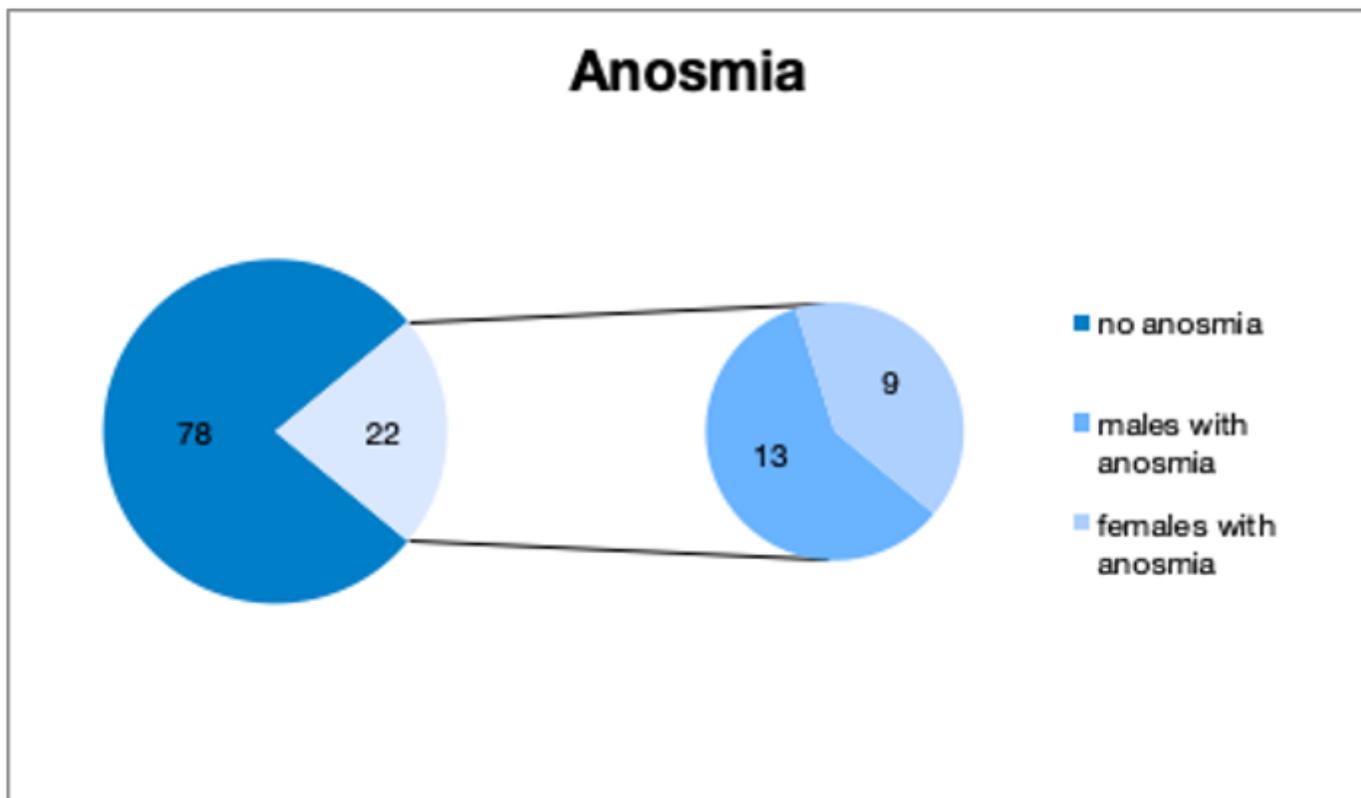


Figure 3

Chart 3 - Distribution of patients of COVID-19 with Anosmia