



A Study on Otorhinolaryngological Presentations in Covid 19 Patients in a Tertiary Health Care Center

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Abstract Corona virus also known as 2019 novel corona virus, a single stranded positive sense RNA virus is the causative agent of COVID 19 disease. It mainly spreads via the respiratory route by means of aerosols. The objectives of our study were. To know the prevalence of ENT presentations in COVID 19 patients and to know the relationship between the symptoms and category of the disease as well as to know the relation between the blood group and recovery from the disease. The first 500 patients who were tested positive for COVID 19 and getting treated in our hospital were included in the study after taking written informed consent from the patients who were willing to participate in the study. A detailed history was taken from all the patients and more stress was given on the ENT symptoms with respect to its onset, duration and time taken for the relief of symptoms. The ENT symptoms were compared with the category of the disease as well as the blood group of the patients. Statistical analysis was done using Chi square test and Statistical Package for Social Sciences [SPSS] for Windows Version 22.0 Released 2013. Armonk, NY: IBM Corp., was used to perform statistical analyses. In our study 310 (62.0%) were males and 190 (38.0%) patients were females (38%), of age group ranging

from 2 years to 87 years. In our study 367 (73.3%) patients were symptomatic and the rest 133 (26.6%) were asymptomatic. There were 335 (67.0%) patients in category A, 140 (28.0%) in category B and 25 (5.0%) in category C. The most common ENT presentation was headache and its prevalence was more in category C and it was of statistical significance. On comparing the blood group and the ENT symptoms occurrence of sore throat was of statistical significance and its prevalence was more among the O blood group patients. In terms of recovery from the disease the patients with blood group O had good recovery rate. Covid 19 pandemic is still an on going problem and newer strains of the virus are arising as well hence. In our study we found out that isolated ENT symptoms such as aguesia and anosmia were the only presentation of the disease. Thus they can be considered as early marker of the disease and it will be helpful in early detection and isolation of the patient as well as prevention of further spread of the disease.

Keywords COVID 19 · ENT presentations · Anosmia · Aguesia · Blood group

Introduction

COVID 19 pandemic is a major problem that shook the current global population and the healthcare system. The severe acute respiratory syndrome Corona virus 2 (SARS-CoV-2), initially also known as the 2019 novel coronavirus, was first detected in the city of Wuhan in China in December 2019. This COVID 19 virus belongs to the family of SARS—related coronavirus which has led to previous epidemics also [1].

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It can present with variety of symptoms and various systemic manifestations such as fever, malaise, sore throat, difficulty in breathing, dry cough, anorexia, fatigue and diarrhoea. It can present with various ENT symptoms like anosmia, aguesia, sore throat, sudden sensorineural hearing loss, tinnitus etc. [2]. COVID 19 positive patients are being categorized into 3 categories category A, category B, category C according to CDC guidelines [3] on the basis of the severity of the disease and need for hospital care. Category A includes all the asymptomatic patients and patients who can maintain the saturation at room air above 97%, category B includes all the patients who maintain saturation above 90% but less than 95% and are having mild tachypnea and hypotension, and category C includes all the patients who are not able to maintain the saturation above 90% at room air, having severe tachypnea, severe hypotension. It is of utmost importance to detect the disease at the earliest, to isolate the patients and triage them for the proper treatment.

This study was done to know the prevalence of ENT presentations in COVID positive patients as well as the severity of the symptoms in relation to the category of the patient. We also made an attempt to see if there was any relationship between the disease severity and outcome of the disease with blood group of the patients.

Materials and Methods

The study was conducted by the department of ENT in KIMS, Bangalore, on the first 500 patients who were tested positive and were getting treated in our institution for Covid-19, irrespective of age and gender. Written informed consent for the study was taken from all the patients above the age of 18 years and from the guardians below the age of 18 years. Intubated patients, patients not able to give adequate history as well as non complaint patients were not being included in the study. A detailed history was taken from all the study subjects. ENT symptoms was asked in detail including its onset, duration, resolution of each symptoms and each of the symptoms was correlated with the disease category. All the COVID 19 patients were treated according to the standard protocol. The prevalence of overall ENT presentation in COVID 19 positive patients was analyzed. Prevalence of each ENT symptom was also analyzed. The relation between the symptoms and the disease category was also analyzed. The symptoms, severity of the disease and outcome in relation to their blood group also was analyzed.

Statistical Analysis

Statistical Package for Social Sciences [SPSS] for Windows Version 22.0 Released 2013. Armonk, NY: IBM

Corp., was used to perform statistical analyses. Chi Square test was used to compare the ENT symptoms, blood groups and relief of symptoms between different category of COVID-19 disease. The level of significance was set at $P < 0.05$.

Results

In our study 310 (62.0%) were males and 190 (38.0%) patients were females (38%), of age group 2 years to 87 years (Table 1). 367 (73.3%) patients were symptomatic and the rest 133(26.6%) were asymptomatic. There were 335 (67.0%) patients in category A, 140 (28.0%) in category B and 25 (5.0%) in category C.

We mainly took in to consideration about the ENT symptoms among which headache (25.6%) was the most commonest symptom noted, followed by nasal discharge which was the second commonest symptom with prevalence of 21.8% followed by other symptoms such as sore throat(21%), cough (16.9%), loss of taste (16.6%), anosmia (13.4%), nasal obstruction (10.6%), giddiness (7.1%), tinnitus (1.1%), hearing loss (0.3%), ear discharge (0.0%). The prevalence of other symptoms of COVID other than ENT symptoms were around 34.1%.

Intercategory variation of occurrence of symptom was noted in which headache was prevalent in all the three category but was of highest prevalence in category C and it was of statistical significance (Fig. 1). Occurrence of giddiness was also statistically significant. Chemosensory disturbance was observed in our patients of which 12 patients had isolated anosmia, 19 patients had isolated aguesia and 22 patients had isolated anosmia and aguesia as the only presenting symptom of covid (Table 2). Some patients experienced anosmia for as short as 3 days to as long as 3 months inspite of being tested negative for

Table 1 Age distribution among study patients

Age distribution among study patients			
Variable	Category	n	%
Age	< 10 yrs	12	2.4
	11–20 yrs	11	2.2
	21–30 yrs	117	23.4
	31–40 yrs	100	20.0
	41–50 yrs	89	17.8
	51–60 yrs	87	17.4
	61–70 yrs	51	10.2
	71–80 yrs	27	5.4
> 80 yrs	6	1.2	

Fig. 1 Comparison of ENT symptoms between different category of COVID-19 disease using chi square test

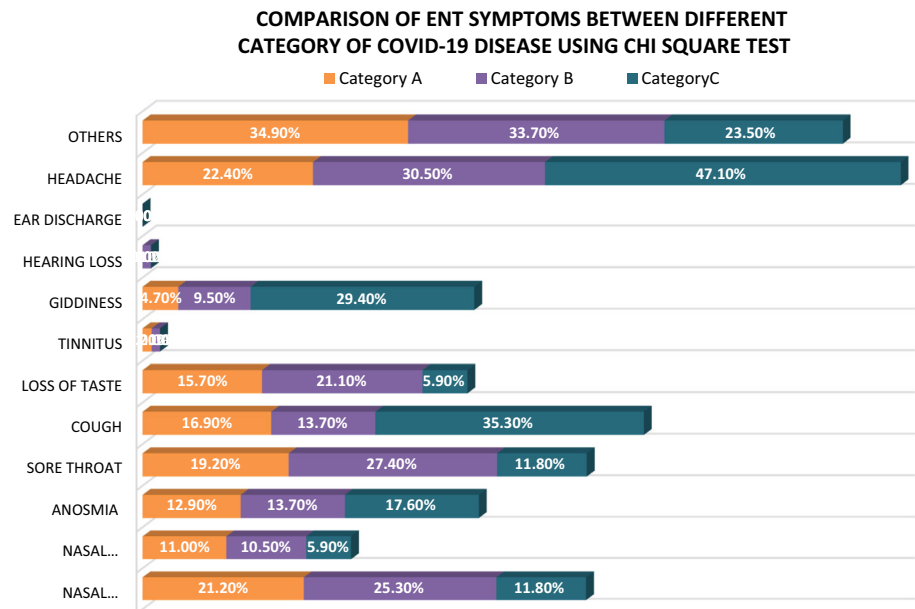


Table 2 Chemosensory disturbances in COVID-19 patients

Symptoms	Isolated	With other symptoms
Anosmia	12	37
Aguesia	19	43
Aguesia and Anosmia	22	20

COVID 19. The symptom of loss to taste was noted to last as long as 28 days followed by spontaneous recovery. Apart from this most of the patients 231 (62.1%) recovered by 1 week, 123 (33.5%) recovered by 2 weeks and in around 13 (3.5%) patients recovered by > 3 weeks (Fig. 2). One patient in category B had hearing loss on examination found to have sensorineural type of hearing loss which recovered spontaneously over the period of 3 months.

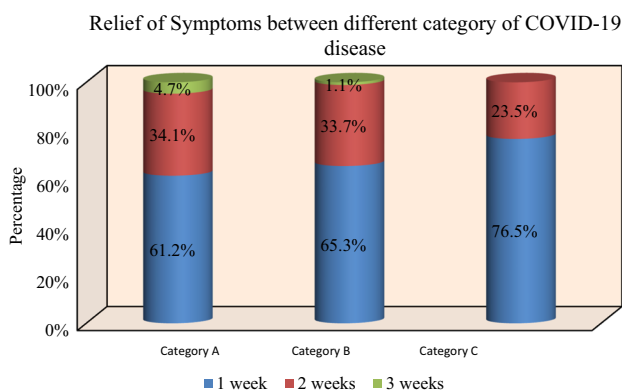
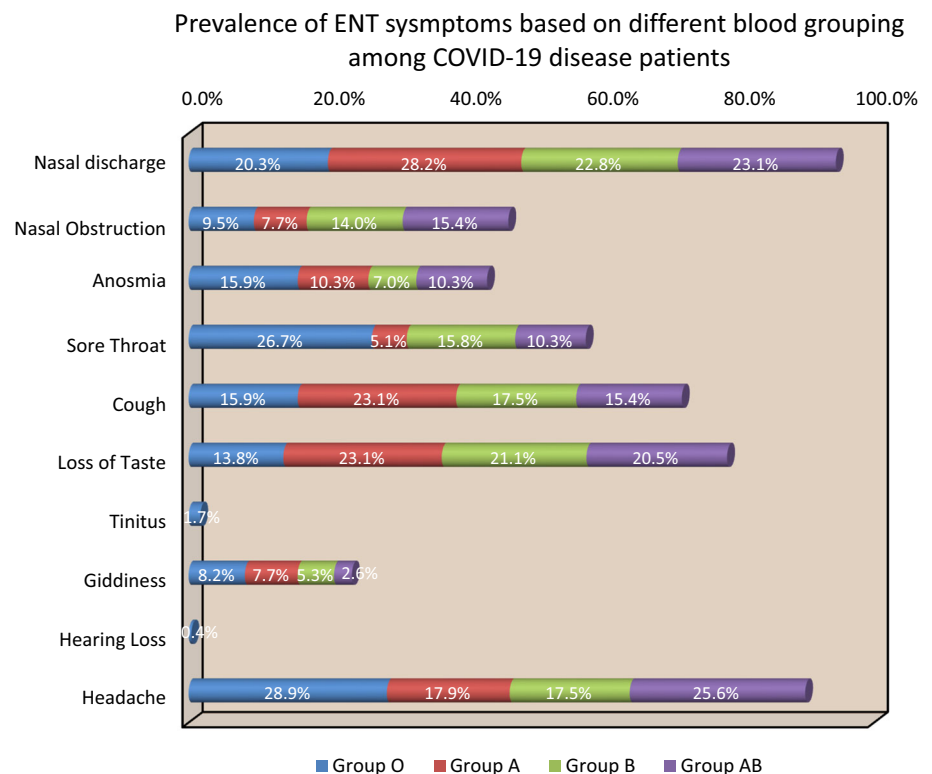


Fig. 2 Relief of symptoms between category of COVID-19 disease

The blood group of the patient was also taken into consideration of which 314 (62.8%) were belonging to O blood group (214 grade A, 88 grade B, 12 grade C), 52 (10.4%) patients belonged to A blood group(38,11,3), 78(15.6%) belonged to B blood group(53,21,4) and 56 (11.2%) patients belonged to AB blood group (Fig. 3). Over all the recovery rate was found to be good in patients with O blood group in our study. Among the O blood group the most common ENT symptom was headache, followed by sorethroat,nasal discharge, anosmia, cough, loss of taste. In patients with A and B blood group, the most common symptom was nasal discharge followed by loss of taste cough, headache 0.10.3% in A group had anosmia, and 7% patients in B group had anosmia. In AB blood group the most common symptom was headache, nasal discharge, loss of taste, nasal obstruction, cough and 10.3% had anosmia. Among the symptoms the occurrence of sore throat in various blood group was statistically significant.In O blood group 64.7% patients showed recovery of symptoms by 1st week, 32.3% in second week,3% by 3rd week. In A blood group 59% patients had recovery of symptoms by 1st week, 33.3% had recovery by 2nd week and 7.7% by 3rd week. Similarly in B blood group 52.6% patients had recovery by 1st week, 45.6% patients had recovery by 2nd week, 1.8% had recovery by 3rd week. Similarly most of the patients had recovery by 1st week, 23.1% had recovery by 2nd week and 5% had recovery by 3rd week.

Fig. 3 Prevalence of ENT symptoms based on different blood grouping among COVID 19 disease patients



Discussion

The year 2020 will be marked in the history of mankind as one of the deadliest year of the twenty-first century because of the pandemic coronavirus disease or COVID 19 which has shaken the mankind from its deepest routes. Coronavirus is single stranded, positive sense RNA virus. It has club shaped spike (S) proteins on their surface and angiotensin-converting enzyme has been reported to be SARS-CoV receptor and the receptor binding domain is present on this S protein of the virus[4].

COVID 19 virus can effect anyone irrespective of age, gender, class, creed, a similar scenario was seen in our study where in patients of all the age group were affected with a peak incidence at the age of 20 to 40 years. In our study 310 (62.0%) were males and 190 (38.0%) were females affected, male predominance in our study can be attributed to the fact that during the initial period of the pandemic lockdown was imposed in our country and the movement of the population was drastically decreased and mostly the men in the family would go out for work, to get essentials to the family, wherein they would contract the disease. This was similar to the findings of the study on 2000 COVID positive patients by Rukmini M Prabhu et al. [5] wherein 1090 (54.5%) males and 910 (45.5%) females were affected but was contradictory to the findings of the study by Erdal sakalli et al. [6] on 259 patients wherein 175(54.5%) females and 84(48.8%) males were affected by

the disease. The symptoms of the COVID-19 disease would vary from being asymptomatic to having complicated presentations such as severe acute respiratory distress syndrome, septic shock, multiorgan dysfunction syndrome and death. The other presentations are fever, breathlessness, headache, myalgia and few ENT symptoms like, sore throat, anosmia, loss of taste, hearing loss, diarrhea etc. were also noted.

According to the CDC guidelines³ the COVID 19 positive patients, were divided into mild, moderate, severe on the basis of symptoms In our study 367 (73.4%) were symptomatic and 133 (26.6%) patients were asymptomatic. In our study 367 (73.3%) patients were symptomatic and the rest 133 (26.6%) were asymptomatic. There were 335 (67.0%) patients in category A, 140 (28.0%) in category B and 25 (5.0%) in category C. we had more number of patients in category A this is because during the initial period of pandemic hospital admission was mandatory by the government for the purpose of isolation of the patient and secondly the stigma and fear of a patient being positive was so much that invariably all the patients inspite of being symptomatic or asymptomatic were admitted. We had less number of patients in category C because, most of the category C patients were either intubated or not in a state to give adequate history or not willing to participate in the study.

The most common ENT symptom observed in symptomatic patients in our study was headache(25.6%)

followed by nasal discharge (21.8%), sore throat(21.0%), cough(16.9%), loss of taste(16.6%), anosmia(13.4%), nasal obstruction(10.6%),giddiness(7%), tinnitus(1%), hearing loss(0.3%),ear discharge (0.0%) in descending order. The prevalence of headache in COVID 19 patients after the improvement of influenza phase, between 7 and 10th day of clinical onset, can be a predictor of marker of onset of the cytokine storm. An aseptic meningeal inflammation induced by this cytokine storm can be subjacent substrate of the 7th day, headache in COVID 19 patients, a more detailed study is needed in this perspective. In a study by Mohammad Waheed El Anwar et al. [7] the most common ENT manifestation was sore throat (13.3%) followed by headache (10.7%), pharyngeal erythema(5.3%),nasal congestion(4%)etc. Similar finding was found in a separate studies by Rukmini M Prabhu et al. [5] and Priyanka Chaurasia et al. [8] where the most common ENT manifestation was sore throat.

Chemosensory disturbance was observed in our patients of which 12 patients had isolated anosmia, 19 patients had isolated aguesia and 22 patients had isolated anosmia and aguesia as the only presenting symptom of covid. Like any viral influenza COVID 19 virus causes damage of the olfactory epithelium along with underlying upper respiratory tract infection could be the cause for acute anosmia [4]. In mouse models SARS-CoV showed transneuronal penetration through the olfactory bulb and its infection resulted in the rapid transmission of the virus to connected areas of the brain [9]. In our study patients has anosmia as short as 3 days to as long as 3 months and all the patients improved of the symptoms over 3 months period of time. Patients who has anosmia for more than 1 week were treated with topical steroidal sprays.

Gane et al. were also of the opinion that the isolated sudden anosmia (ISA) should be considered as highly suspicious for COVID-19. These asymptomatic patients may not develop any further symptoms except ISA [10].

Like mentioned above ACE-2 receptors are the site for binding and penetrating of these viruses and it is found that these receptors, are widely demonstrated in the epithelial cell of the oral mucosa. Damage of mucosal epithelial cells of the oral cavity may explain aguesia observed in the initial stage of disease [11].

In our study one patient in category B complained of hearing loss which on examination was found to be sensorineural type of hearing loss and patients spontaneously improved over 3 months period. Since the patient was in category B and on oral steroids as a part of the treatment regime no other intervention was done from our side to this patient. Sriwijitalai and Wiwanitkit (2020) [12] reported one elderly lady patient of COVID-19 who had coincident sensorineural hearing loss (SNHL). No improvement in hearing loss was observed during the recovery. Brainstem

involvement has been reported in COVID-19 patient and that could be the cause of SNHL.

Apart from the symptoms in our study we also took the details of the blood group of the study subjects and we compared the various blood groups with the grades of disease, occurrence of ENT symptoms as well as the time taken for relief of symptoms. In a meta-analysis by F.Powrali et al. [13] on relationship between blood group and risk of infection and death in COVID 19 found that patients with O blood group were more susceptible for the infection and A blood group was least susceptible. This he attributed to the fact that ACE receptors which is the binding site for the virus is in least concentration in patients with O blood group and in highest concentration in A blood group. In our study the most commonest blood group involved in COVID 19 was O blood group and AB group was least affected but in comparison to the recovery from the disease O blood group had a better recovery rate when compared to all other blood group whereas the recovery rate was not satisfactory in AB blood group as well O blood group patients had increased susceptibility of infection and A blood group were least susceptible for contracting the disease.

Conclusion

COVID 19 pandemic is not over yet, every day crores together the cases are emerging and now a new strain of corona virus is also emerged and causing a new outbreak as well. In our study we found there was relationship between the occurrence of the disease and headache and it was a common presentation as well. Studies need to be focused on this concept in order to air the treatment. In our study isolated ENT symptoms such as anosmia, aguesia were the only presenting symptoms in few patients and thus we can say that these isolated symptoms should not be ignored and should be considered as the earliest marker of COVID 19 unless otherwise proved an thus it will help in early detection and isolation of the patients and prevention of further spread of the disease. We also found that as the presentation the ENT symptoms varies with the category of the disease as well more studies regarding ENT symptoms and category of the disease needs to be focused on.

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Declarations

Conflict of interest There are no conflict of interest.

Ethical approval Ethical clearance for the study was taken from the institutions ethical committee.

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