

Study the ENT Manifestations of Covid-19 Patients, Aden, Yemen

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ABSTRACT

Objective: To study and document the ENT manifestations of covid-19 infection of patients in Aden, Yemen

Materials and method: This was a retrospective descriptive study, in which we reviewed the medical records of 81 patients with Covid-19 seen at Covid-19 Treatment Center at Al-Gamhoria Teaching Hospital in Aden during the period April 2020 to March 2021.

The Fisher test was used to determine whether the difference between means and values are significant. A p-value <0.05 was considered statistically significant.

Results: Out of 81 patients, 52 patients were males (64.2%) and 29 patients (35.8%) were females and the mean age was 40.2 ± 13.9 years. The mean age of male patients was 41.8 ± 13.6 years while for females was 37.3 ± 14.5 years. The age ranged between 18 to 66 years; the association between means is statistically significant, in addition the age group < 45 years represented 59.3%.

Anosmia-dysgeusia with sore throat and pharyngeal erythema, were the most common ENT manifestations, 77.8%, and 77.8% respectively. The male patients had a higher probability of developing ENT manifestations.

The relation between anosmia-dysgeusia and sex was statistically significant ($p < 0.05$).

The manifestation of anosmia-dysgeusia more common among patients of the age group < 45 years with 43.2%.

Fever was found in (93.8%) patients, followed by general weakness & fatigue in (85.2%), sleep disorders in (84.0%), and muscular ache in (79.0%).

Among comorbid conditions diabetes mellitus was found as most common in (16.0%) patients.

Conclusion: The most common ENT manifestations were anosmia-dysgeusia with sore throat and pharyngeal erythema.

Key words: ENT manifestations, general symptoms, comorbid diseases, Covid-19, Aden.

INTRODUCTION

Since the first documented case of pneumonia of unknown origin hailed from Wuhan city, Hubei province, China, back in December 2019, the novel SARS-CoV-2 leading to Covid-19 has swept across the globe afflicted the people in every corner. As of 21 March 2021, the total case number has culminated to over 122 million worldwide, with a mortality rate of 2.2% [1].

11 March 2021 marks the first anniversary since WHO declared the Covid-19 outbreak a pandemic. With the vaccine challenges that lie ahead, the light at the end of the tunnel remains elusive.

We learnt that the transmission routes are via respiratory droplet, aerosols and by contact that may be indirect, which succinctly impose a remarkably high risk to the head and neck surgeons who often deal with aerosol-generating procedures.

In fact, the first doctor who succumbed to Covid-19 in Wuhan was an otolaryngologist [2]. The Covid-19, which is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is an ongoing viral pandemic that emerged from the city of Wuhan, China and quickly spread to the rest of the world [3]. This outbreak has been responsible for nearly 935,000 deaths

worldwide and more than 29 million people have been confirmed as infected so far [4]. The virus is transmitted from human to human via droplet transmission and direct contact with oral, nasal, and eye mucous membranes [5]. Studies suggest that Covid-19 may become airborne through aerosol-generating clinical procedures [6].

Coronaviruses are known to cause diseases of varying severity affecting respiratory, neurological, gastrointestinal, and hepatic organs in animals and humans [6].

According to the clinical reports from Asia, the most frequently observed symptoms are cough, fever, sputum production, dyspnea, arthralgia, myalgia, rhinorrhea, sore throat, headache, and diarrhea [7].

The above-mentioned symptoms have been reported and they are the most common findings for Covid-19; however, several studies, particularly from Europe, have also reported certain chemosensory dysfunction symptoms such as anosmia and ageusia, which are common in Covid positive patients [8].

The virus is thought to be transmitted via aerosols produced during sneezing, coughing, or talking with infected people [9].

Preventive measures such as use of masks and thorough cleaning of hands, clothes, and shoes, and maintaining social distance can break the chain of transmission [10].

Objectives

To study and document the ENT manifestations of covid-19 infection of patients in Aden, Yemen

MATERIALS AND METHOD

This was a retrospective descriptive study, in which we reviewed the medical records of 81 patients with Covid-19 seen at Covid-19 Treatment Center at Al-Gamhoria Teaching Hospital in Aden during the period April 2020 to March 2021.

The patients' charts were retrieved and information about sex, age, ENT manifestations, general symptoms and comorbid conditions were obtained.

SPSS program, version 17, was used to analyze the data. The continuous data are presented as means and categorical variables are presented as frequencies and percentages. The Fisher test was used to determine whether the difference between means and values are significant. A p-value <0.05 was considered statistically significant.

RESULTS

Out of 81 patients, 52 patients were males (64.2%) and 29 patients (35.8%) were females and the mean age was 40.2±13.9 years. The mean age of male patients was 41.8±13.6 years while for females was 37.3±14.5 years. The age ranged between 18 to 66 years; the association between means is statistically significant. In addition, the age group < 45 years represented 59.3% while the age group 45 and more represented 40.7%; as shown in Table 1 and Figure 1.

Table 1: Demographic variables of the study patients (no = 81)

Variables	No	%
Sex:		
Males	52	64.2
Females	29	35.8
Age range (years):	18 – 66	
Mean age (all patients):	40.2 ±13.9	
Mean age (males):	41.8±13.6	
Mean age (females):	37.3±14.5	
p-value	0.025	
Age groups (years):		
< 45	48	59.3
≥45	33	40.7

Figure 1: Distribution of study patients related to sex

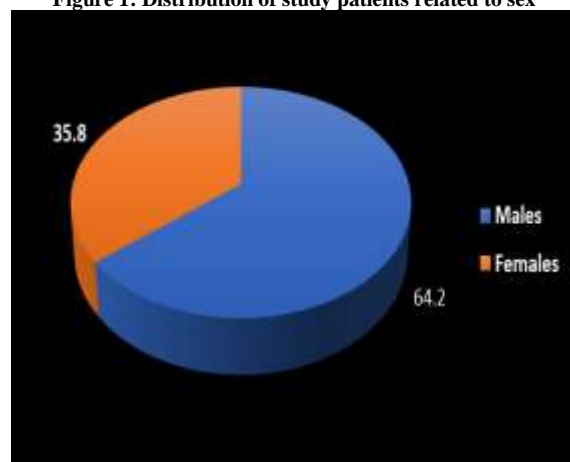


Table 2 & Figure 2 reveal the distribution of ENT manifestations related to sex of the

study patients. Anosmia-dysgeusia with sore throat and pharyngeal erythema, were the most common ENT manifestations, 77.8%, and 77.8% respectively, followed by the non- ENT manifestations headache 74.1% and cough 51.8%, breathing difficulty 34.6%, odynophagia 28.4%, nasal discharge 25.9%, and nasal congestion 24.7%.

Less than these percent of ENT manifestations presented as nasal obstruction 17.3, oropharyngeal ulcer 16.0%, tinnitus 9.8%, epistaxis 8.6%,

vertigo 8.6%, hearing loss 7.4% and ear pain and itching 7.4%.

The analysis of demographic factors as shown in Table 2 indicates the influence of gender on the occurrence of individual ENT symptoms. The male patients had a higher probability of developing ENT manifestations.

The relation between anosmia-dysgeusia and sex was statistically significant ($p < 0.05$), while the rest of ENT manifestations were not statistically significant with sex.

Table 2: Distribution of ENT manifestations related to sex of the study patients (n=81)

Variables	Sex		Total No (%)	P-value
	Females No (%)	Males No (%)		
Anosmia-dysgeusia:				
Yes	27 (33.3)	36 (44.4)	63 (77.8)	P=0.011
No	2 (2.5)	16 (19.8)	18 (22.2)	
Sore throat & pharyngeal erythema:				
Yes	26 (32.1)	37 (45.7)	63 (77.8)	P = 0.047
No	3 (3.7)	15 (18.5)	18 (22.2)	
Headache:				
Yes	20 (24.7)	40 (49.4)	60 (74.1)	P > 0.05
No	9 (11.1)	12 (14.8)	21 (25.9)	
Cough:				
Yes	15 (18.5)	27 (33.3)	42 (51.8)	P > 0.05
No	14 (17.3)	25 (30.9)	39 (48.2)	
Breathing difficulty:				
Yes	9 (11.1)	19 (23.5)	28 (34.6)	P > 0.05
No	20 (24.7)	33 (40.7)	53 (65.4)	
Odynophagia:				
Yes	7 (8.6)	16 (19.8)	23 (28.4)	P > 0.05
No	22 (27.2)	36 (44.4)	58 (71.6)	
Nasal discharge:				
Yes	7 (8.6)	14 (17.3)	21 (25.9)	P > 0.05
No	22 (27.2)	38 (46.9)	60 (74.1)	
Nasal congestion:				
Yes	8 (9.9)	12 (14.8)	20 (24.7)	P > 0.05
No	21 (25.9)	40 (49.4)	61 (75.3)	
Nasal obstruction:				
Yes	6 (7.4)	8 (9.9)	14 (17.3)	P > 0.05
No	23 (28.4)	44 (54.3)	67 (82.7)	
Oropharyngeal ulcer:				
Yes	4 (4.9)	9 (11.1)	13 (16.0)	P > 0.05
No	25 (30.9)	43 (53.1)	68 (84.0)	

Tinnitus:						
Yes	1	(1.2)	7	(8.6)	8	P > 0.05
No	28	(34.6)	45	(55.6)	73 (90.1)	
Epistaxis:						
Yes	1	(1.2)	6	(7.4)	7	P > 0.05
No	28	(34.6)	46	(56.8)	74 (91.4)	
Vertigo:						
Yes	3	(3.7)	4	(4.9)	7	P > 0.05
No	26	(32.1)	48	(59.3)	74 (91.4)	
Hearing loss:						
Yes	1	(1.2)	5	(6.2)	6	P > 0.05
No	28	(34.6)	47	(58.0)	75 (92.6)	
Ear pain and itching:						
Yes	1	(1.2)	5	(6.2)	6	P > 0.05
No	28	(34.6)	47	(58.0)	75 (92.6)	

Figure 2: Distribution of ENT manifestations related to sex of the study patients

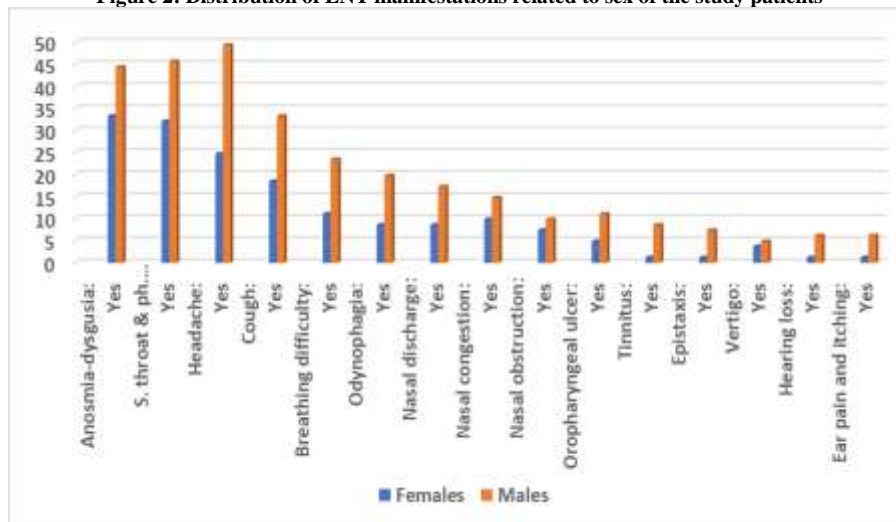


Table 3 & Figure 3 illustrate the distribution of ENT manifestations related to age groups of the study patients.

We found the manifestation of anosmia-dysgeusia more common among patients of the age group <45 years with 43.2%, additionally sore throat & pharyngeal erythema and headache more common in patients of the age group <45 years with 46.9% and 45.7% respectively.

While cough and breathing difficulty more common in patients of the age group ≥45 years with 34.6% and 30.9% respectively. Then there is agreement and differences in the ENT manifestation rates between the

two age groups less than 45 years, as well as 45 years and more.

The analysis of age factors as shown in Table 3 indicates the influence of age on the occurrence of individual ENT symptoms. The age group < 45 years old have a higher probability of developing anosmia-dysgeusia, sore throat & pharyngeal erythema, headache, nasal discharge, nasal congestion and nasal obstruction

The relation between cough, breathing difficulty, epistaxis and vertigo with age groups was statistically significant (p < 0.05), while the rest of ENT manifestations were not statistically significant with age groups.

Table 3: Distribution of ENT manifestations related to age groups of the study patients (n=81)

Variables	Age group (years)		Total		P-value
	< 45 No (%)	≥ 45 No (%)	No (%)	(%)	
Anosmia-dysgusia:					
Yes	35 (43.2)	28 (34.6)	63 (77.8)		P > 0.05
No	13 (16.0)	5 (6.2)	18 (22.2)		
S. throat & ph. erythmia:					
Yes	38 (46.9)	25 (30.9)	63 (77.8)		P > 0.05
No	10 (12.3)	8 (9.9)	18 (22.2)		
Headache:					
Yes	37 (45.7)	23 (28.4)	60 (74.1)		P > 0.05
No	11 (13.6)	10 (12.3)	21 (25.9)		
Cough:					
Yes	14 (17.3)	28 (34.6)	42 (51.9)		P = 0.000
No	34 (42.0)	5 (6.2)	39 (48.1)		
Breathing difficulty:					
Yes	3 (3.7)	25 (30.9)	28 (34.6)		P = 0.000
No	45 (55.5)	8 (9.9)	53 (65.4)		
Odynophagia:					
Yes	12 (14.8)	11 (13.6)	23 (28.4)		P > 0.05
No	36 (44.4)	22 (27.2)	58 (71.6)		
Nasal discharge:					
Yes	15 (18.5)	6 (7.4)	21 (25.9)		P > 0.05
No	33 (40.7)	27 (33.3)	60 (74.1)		
Nasal congestion:					
Yes	11 (13.6)	9 (11.1)	20 (24.7)		P > 0.05
No	37 (45.7)	24 (29.5)	61 (75.3)		
Nasal obstruction:					
Yes	9 (11.1)	5 (6.2)	14 (17.3)		P > 0.05
No	39 (48.1)	28 (34.6)	67 (82.7)		
Oropharyngeal ulcer:					
Yes	5 (6.2)	8 (9.9)	13 (16.0)		P > 0.05
No	43 (53.1)	25 (30.9)	68 (84.0)		
Tinnitus:					
Yes	3 (3.7)	5 (6.2)	8 (9.9)		P > 0.05
No	45 (55.6)	28 (34.6)	73 (90.1)		
Epistaxis:					
Yes	1 (1.2)	6 (7.4)	7 (8.6)		P = 0.017
No	47 (58.0)	27 (33.4)	74 (91.4)		
Vertigo:					
Yes	1 (1.2)	6 (7.4)	7 (8.6)		P = 0.017
No	47 (58.0)	27 (33.4)	74 (91.4)		
Hearing loss:					
Yes	2 (2.5)	4 (4.9)	6 (7.4)		P > 0.05
No	46 (56.8)	29 (35.8)	75 (92.6)		
Ear pain and itching:					
Yes	2 (2.5)	4 (4.9)	6 (7.4)		P > 0.05
No	46 (56.8)	29 (35.8)	75 (92.6)		

S. throat & ph. erythmia = Sore throat & pharyngeal erythmia

Figure 3: Distribution of ENT manifestations related to age groups of the study patients

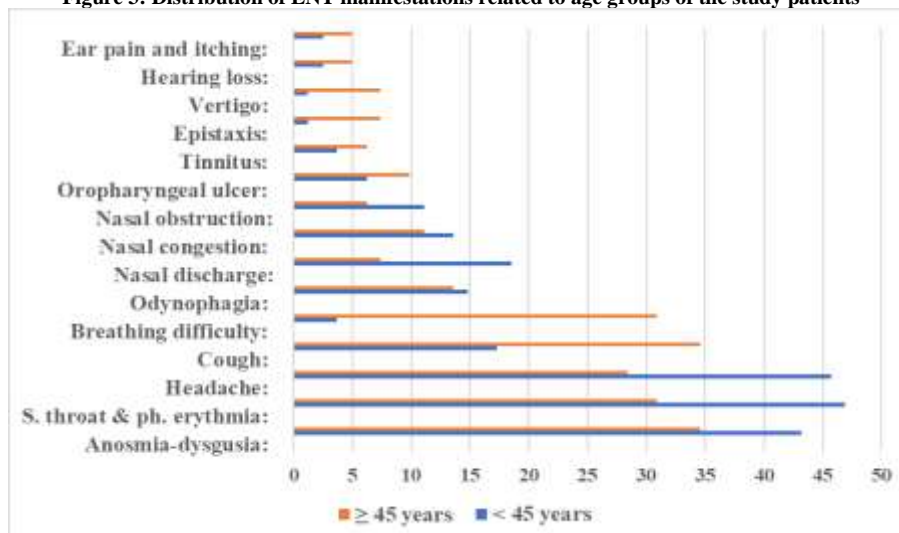


Table 4 summarizes the frequency of general symptoms. Fever was found in 76 (93.8%) patients, followed by general weakness & fatigue in 69 (85.2%), sleep disorders in 68 (84.0%), muscular ache in 64 (79.0%) and loss of appetite in 54 (66.7%). Nausea and vomiting, was observed in 34 (42.0%) patients, diarrhea in 34 (42.0%) patients, abdominal pain in 21 (25.9%) and skin rash in 3 (3.7%) patients.

Table 4: Frequency of general symptoms (no = 81)

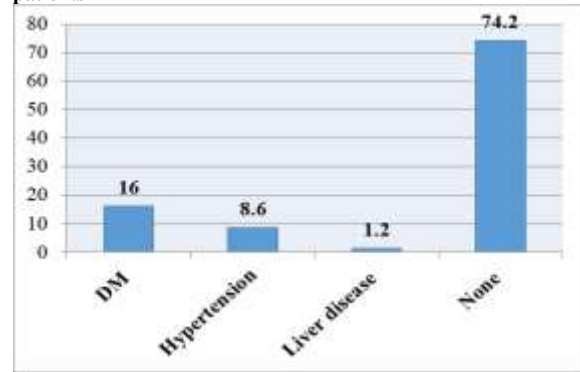
Variables	No	%
Fever:		
Yes	76	93.8
No	5	6.2
General weakness & fatigue:		
Yes	69	85.2
No	12	14.8
Sleep disorders:		
Yes	68	84.0
No	13	16.0
Muscular ache:		
Yes	64	79.0
No	17	21.0
Loss of appetite:		
Yes	54	66.7
No	27	33.3
Nausea and vomiting:		
Yes	34	42.0
No	47	58.0
Diarrhea:		
Yes	34	42.0
No	47	58.0
Abdominal pain:		
Yes	21	25.9
No	60	74.1
Skin rash:		
Yes	3	3.7
No	78	96.3

Among comorbid conditions diabetes mellitus (DM) was found as most common in 13 (16.0%) patients followed by hypertension in 7 (8.6%) patients and liver diseases in 1 (1.2%) patient; as shown in Table 5 and Figure 4.

Table 5: Distribution of comorbid conditions among the study patients

Variables	No	%
Comorbid conditions:		
Diabetes mellitus (DM)	13	16.0
Hypertension	7	8.6
Liver disease	1	1.2
None	60	74.2
Total	81	100

Figure 4: Percentage of comorbid diseases among the study patients



DISCUSSION

Symptomatology of Covid-19 is diverse; clinically, it ranges from asymptomatic to mild upper respiratory tract infection (URTI)-like symptoms to acute respiratory distress syndrome (ARDS) to multiorgan dysfunction [11]. Most common symptoms include fever, cough, sore throat, headache, fatigue, myalgia, and breathlessness, [12,13,14] due to which Covid-19 infection become indistinguishable from other upper respiratory infections.

Our present study found 81 patients with Covid-19 during one year of the study period and they were 52 (64.2%) males and 29 (35.8%) females with a ratio male to female 1.8:1.

The mean age of male patients was 41.8 ± 13.6 years while for females was 37.3 ± 14.5 years. The age ranged between 18 to 66 years; the association between means is statistically significant. In addition, the age group < 45 years represented 59.3% while the age group 45 and more represented 40.7%.

Borah et al [15] reported that, a total of 2000 laboratory confirmed cases were included in their study and out of these (58%) were males and (42%) were females. They added that Covid-19 disease has rapidly spread across the whole world. Otorhinolaryngologists are at high risk due to the close contact with the mucus membrane of the upper respiratory tract.

A study conducted in Turkey [16] reported that a total of 116 patients consisting of (50%) males and (50%) females were included in their study. The mean age of the

patients was 57.24 ± 14.32 years and the age ranged between 19 and 83 years. The patients were grouped in terms of age, where (53.4%) were under the age of 60 years, and (46.6%) were in the group over 60 years. There was no statistical difference in terms of gender and mean age between groups ($p > 0.05$).

In our present study we found anosmia-dysgeusia and sore throat + pharyngeal erythema, were the most common ENT manifestations, 77.8%, and 77.8% respectively, followed by headache 74.1% and cough 51.8%, breath difficulty 34.6%, odynophagia 28.4%, nasal discharge 25.9%, and nasal congestion 24.7%.

Less than these percent of ENT manifestations presented as nasal obstruction 17.3, oropharyngeal ulcer 16.0%, tinnitus 9.8%, epistaxis 8.6%, vertigo 8.6%, hearing loss 7.4% and ear pain and itching 7.4%.

The relation between anosmia-dysgeusia and sex was statistically significant ($p < 0.05$), while the rest of ENT manifestations were not statistically significant with sex.

El-Anwar et al [17] from Egypt reported in their study, that the most frequently ENT manifestations were sore throat in (30%) patients, nasal congestion in (28.3%) patients, nasal obstruction in (26.7%) patients, sneezing in (26.6%) patients, headache in (25%) patients, olfactory and taste dysfunction in (25%) patients, and runny nose or rhinorrhea in (20%) patients.

Srivastava et al [18] mentioned that the majority (66.5%) of the cases had sore throat, followed by cases of nasal congestion (54.1%). Breathing difficulty was present in (41.7%) cases, and dry cough (37.1%). This finding is to some extent consistent with our study findings.

Different studies [19,20,21] reported that the disease can manifest in the form of various symptoms, such as fever, cough, breathing difficulty, fatigue, myalgia, rhinorrhea, and disturbances in the sense of smell and taste. In the later stages of the disease, symptoms of pneumonia, acute

respiratory distress syndrome (ARDS), and respiratory failure have been also reported.

Srivastava et al [18] reported from North India that the results of their study showed that the most common presentation was sore throat with (66.46%) followed by nasal congestion with (54.14%). Patients also presented with breathing difficulty (41.71%) and dry cough (37.07%). Few patients also complained of alteration of the sense of smell and taste with (1.76%).

According to the report by Dagur et al [22], common symptoms of Covid-19 are high grade fever, tiredness, and dry cough. A meta-analysis by Krajewska et al [23] demonstrated that, in the Chinese studies, fever and dry cough were frequently encountered symptoms, whereas in Australian studies, rhinorrhea and dyspnea were commonly seen. Studies from South Korea, Italy, China, and Germany reported hyposmia and anosmia as frequently encountered symptoms [23].

A study conducted in India [24] found the most common ENT manifestations for Covid-19 were loss of smell and taste sensation (26%), sore throat (47.2%), hearing loss (54.4%) and headache (37.8%). In the current study we found the manifestation of anosmia-dysgeusia more common among patients of the age group < 45 years with 43.2%, additionally sore throat & pharyngeal erythema and headache more common in patients of the age group < 45 years with 46.9% and 45.7% respectively. In addition, cough and breathing difficulty were found more common in patients of the age group ≥ 45 years with 34.6% and 30.9% respectively. Then there is agreement and differences in the rest of ENT manifestation rates between the two age groups less than 45 years, as well as 45 years and more.

The relation between cough, breathing difficulty, epistaxis and vertigo with age groups was statistically significant ($p < 0.05$), while the rest of ENT manifestations were not statistically significant with age groups.

Savtale et al [24] reported in their study that hyposmia/anosmia and ageusia were both sudden in onset and had a higher frequency in younger population.

In our present study, we found fever in (93.8%) patients, followed by general weakness & fatigue in (85.2%) patients, sleep disorders in (84.0%) patients, muscular ache in (79.0%) patients and loss of appetite in (66.7%) patients. Nausea and vomiting were observed in (42.0%) patients, diarrhea in (42.0%) patients, abdominal pain in (25.9%) and skin rash in (3.7%) patients.

A published study reported that the most common symptoms with which these patients presented were fever (93%) and cough (85%) and the least common symptoms were malaise, generalized bodyache and abdominal symptoms like diarrhea [15].

According to studies conducted previously [25,26], it was found that non-ENT manifestations like fever are more common in Covid patients than ENT manifestations. These symptoms are more commonly seen during the early stages of the disease [27].

In previous studies [28,29], fever was the most common symptom, reported to affect up to 92.8% of patients, followed by cough (69.8%), dyspnea (34.5%), myalgia (27.7%), headache (7.2%), and diarrhea (6.1%).

In the present study, we found diabetes mellitus as most common comorbid disease in (16.0%) patients followed by hypertension in (8.6%) patients and liver diseases in (1.2%) patient.

A study conducted in China by Guan et al [30] reported that of the 1590 cases of Covid-19, (25.1%) reported having at least one comorbidity. The prevalence of specific comorbidities were: hypertension (16.9%), other cardiovascular diseases (53.7%) cerebrovascular diseases (1.9%), diabetes (8.2%), hepatitis B infections (1.8%), chronic obstructive pulmonary disease (1.5%), chronic kidney diseases (1.3%), malignancy (1.1%) and immunodeficiency (0.2%).

In this study, 25.8% of the patients had comorbid diseases and it was higher than the findings of the study conducted in China 15.8% [31] and similar to the finding conducted in Thailand 25.0% [32] and Singapore 28.3% [33].

In the current study, diabetes mellitus and hypertension were the most common comorbidities and these results supported the findings of the earlier studies conducted in hospitalized Covid-19 patients [34,35,36].

CONCLUSION

The most common ENT manifestations for Covid-19 in our current study were anosmia-dysgeusia with sore throat and pharyngeal erythema, followed by headache, cough breathing difficulty. ENT manifestations are not always the same in Covid-19 patients. They may vary with age, sex and comorbid conditions. Further studies are needed to determine and to evaluate this health problem in our country.

Conflict of Interest: None

Ethical Approval: Approved

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