

The Clinical Manifestations of Otolaryngology in COVID-19

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Abstract

Background: In late 2019, a new coronavirus known as SARS-CoV-2 emerged, causing an acute respiratory disease called COVID-19. The outbreak originated in China and quickly gained a global attention. COVID-19 can cause various upper respiratory tract symptoms such as sore throat, nasal obstruction, and loss of smell function

Patients and Methods: this is a cross-sectional descriptive study done during the COVID-19 pandemic from June 1st, 2020 to August 31st, 2020. The study was carried out in some isolation hospitals located in Baghdad and Najaf cities. The collected data are from laboratory-confirmed COVID-19 positive patients by using a pre-designed questionnaire which included demographic information such as age, gender, occupation, and place of residence. All participants were specifically asked about their symptoms related to the ear, nose, and throat (ENT) system.

Results: A Total number of 408 confirmed Covid-19 cases had been included in the current study. Age range of participants was from 12 to 86 years with average of 51.42 years. The study has revealed that sore throat is the predominant ENT symptom in COVID-19 cases, while ear symptoms are uncommon. The most common nasal manifestations observed in COVID-19 patients were anosmia/ hyposmia and nasal obstruction.

Discussion: This study demonstrated the different ENT manifestations occurred COVID-19 patients. These manifestations involved both lower and upper respiratory tract symptoms. Looking to these different manifestations with more interest can help in the early diagnosis and treatment of COVID-19 cases.

Keywords: SARS-CoV-2, ENT manifestations, COVID-19.

INTRODUCTION

In late 2019, a new coronavirus known as SARS-CoV-2 emerged, leading to an acute respiratory disease called COVID-19. The outbreak appeared first in China and quickly

gained global attention. On January 30, 2020, the World Health Organization (WHO) announced COVID-19 as a pandemic and a public health emergency of international

concern. This marked the third occurrence of a highly pathogenic and widespread coronavirus epidemic, following the outbreaks of severe acute respiratory syndrome (SARS-CoV) in 2002 and Middle East respiratory syndrome (MERS-CoV) in 2012. The emergence of SARS-CoV-2 has resulted in significant public health crises worldwide ⁽¹⁾.

On February 24, 2020, the first case of COVID-19 was recorded in the city of Najaf in Iraq. The case involved an Iranian student of religion, and a sample from the individual was examined.

COVID-19 primarily manifests with lower respiratory tract symptoms, including cough and difficulty in breathing. In severe cases, it can progress rapidly to acute respiratory distress syndrome (ARDS) ⁽²⁾. Additionally, COVID-19 can also cause various upper respiratory tract symptoms such as sore throat, nasal obstruction, and loss of smell function ⁽³⁾.

Aim of the study:

The aim of the study is to determine and interpret the different ENT (ear, nose and throat) manifestations in patients who were reported as COVID-19 positive.

Patients and Methods

A cross-sectional descriptive study was conducted during the COVID-19 pandemic from June 1st, 2020 to August 31st, 2020. It

was carried out in some of the isolation hospitals located in Baghdad and Najaf cities. The data were collected from laboratory-confirmed COVID-19 positive patients by using a pre-designed questionnaire which included demographic information such as age, gender, occupation, place of residence, number of rooms in the house, and number of family members residing in the house. Cases with mild to moderate conditions were included and those with severe to critical status were excluded.

All participants were specifically asked about their symptoms related to the ENT system. These symptoms included sore throat, changes in taste, difficulty swallowing (dysphagia), painful swallowing (odynophagia), hoarseness, nasal obstruction, nasal discharge, nosebleeds (epistaxis), facial pain, changes in smell, hearing loss, earaches, ear discharge, ringing in the ears (tinnitus), dizziness (vertigo), and facial paralysis (facial palsy).

Results

A Total number of 408 confirmed Covid-19 cases had been included in current study. Ages of participants ranged from 12 to 86 years with average of 51.42 years. There were 240 (58.8%) males and 168(41.2%) as shown in Figure (1) and Table (1) below.

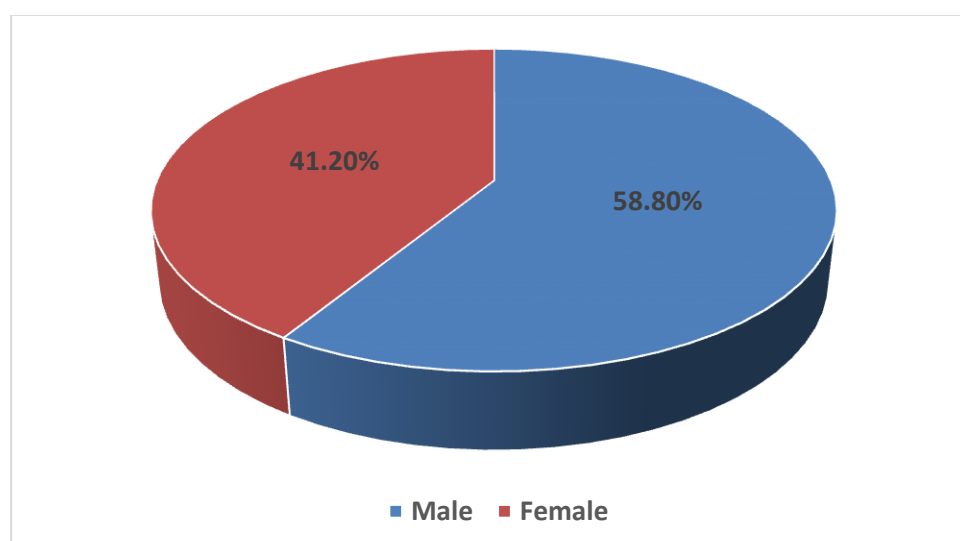


Figure (1) Gender Distribution of the Patients

Table (1) Distribution of Gender according to Age Groups.

	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	Total
Male	2	22	35	56	51	42	30	2	240
Female	6	22	25	38	25	32	17	3	168
Total	8	44	60	94	76	74	47	5	408

Table (2) The Association between Symptoms and Gender

Symptoms	Male n=240(%)	Female n=168(%)	Total n=408(%)	P value
Nasal obstruction	81(33.7)	68(40.47)	149(36.51)	0.164
Nasal discharge	61(25.4)	40(23.8)	101(24.75)	0.711
Epistaxis	10(4.1)	3(1.78)	13(3.18)	0.177
Facial pain	16(6.6)	11(4.58)	27(6.61)	0.962
Anosmia/hyposmia	108(45)	98(58.3)	206(50.49)	0.008
Cacosmia	8(3.3)	10(4.16)	18(4.41)	0.204
Anosmia as only symptom	21(8.7)	20(11.9)	41(10.04)	0.296
Sorethroat	149(62.1)	101(60.1)	250(61.27)	0.688
Change of taste	90(37.5)	73(43.45)	163(39.95)	0.227
Dysphagia/odynophagia	96(40)	74(44.04)	170(41.66)	0.414
Hoarseness	41(17.1)	31(18.45)	72(17.64)	0.721
Otalgia	23(9.58)	19(11.3)	42(10.29)	0.572
Ear discharge	2(0.83)	3(1.25)	5(1.22)	0.389
Hearing loss	17(7.1)	17(10.1)	34(8.33)	0.274
Tinnitus	14(5.8)	17(10.1)	31(7.59)	0.107
Vertigo/dizziness	36(15)	39(23.2)	75(18.38)	0.035
Facial palsy	4(1.66)	0(0.0)	4(0.98)	0.804

Table (2) shows no significant association between gender and symptoms except for Anosmia/hyposmia and vertigo/dizziness which is higher in females than males

Table(3) Association between symptoms and age groups.

Symptoms	Age groups								total	P value
	11-20 n=8	21-30 n=44	31-40 n=60	41-50 n=94	51-60 n=76	61-70 n=74	71-80 n=47	81-90 n=5		
Nasal obstruction	5	23	22	43	28	18	8	2	149	0.00
Nasal discharge	4	14	13	28	18	14	8	2	101	0.23
Epistaxis	0	2	2	4	3	1	1	0	13	0.95
Facial pain	0	6	8	5	5	3	0	0	27	0.00
Anosmia/hyposmia	5	30	39	54	33	30	14	1	206	0.00
Cacosmia	1	3	5	5	3	0	1	0	18	0.29
Anosmia as only symptom	1	10	10	8	6	5	1	0	41	0.02
Sorethroat	5	25	35	62	46	44	31	2	250	0.88
Change of taste	4	19	22	46	27	26	18	1	163	0.51
Dysphagia/odynophagia	5	12	14	49	29	33	26	2	170	0.00
Hoarseness	3	5	5	18	12	19	9	1	72	0.15
Otalgia	0	7	4	13	7	8	3	0	42	0.53
Ear discharge	0	2	1	2	0	0	0	0	5	0.39
Hearing loss	0	9	6	6	7	5	1	0	34	0.07
Tinnitus	0	4	6	9	6	4	1	1	31	0.60
Vertigo/dizziness	3	7	8	18	14	20	5	0	75	0.19
Facial palsy	0	0	0	0	1	0	2	1	4	0.00

Table (3) shows a significant association between nasal obstruction and age (higher percentage in 11-30 years age) as well as a significant with facial pain (higher percentage in 21-40). Anosmia was significantly higher in the age groups (21-50years); dysphagia/ odynophagia were significantly higher in (11-20years); the facial palsy was higher in percentage in the age group 81-90 years.

Discussion

In December 2019, a new epidemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) appeared in

China, leading to the declaration of the disease as COVID-19 by the World Health Organization in February 2020. COVID-19 exhibits a wide range of clinical presentations,

varying from mild cases without specific symptoms to severe septic shock and multiple organ dysfunction^{(4),(5)}. However, the clinical features of COVID-19 remain largely uncertain. While there is a significant focus on the lower respiratory tract manifestations and consequences of the virus, there is limited literature on the ENT manifestations of COVID-19, necessitating further study to define the epidemiological and clinical characteristics of non-respiratory symptoms.

This literature aims to provide an updated understanding of ENT clinical features in COVID-19 patients, based on published and peer-reviewed articles. The findings of this study align with previous reports, indicating that sore throat is the predominant ENT symptom in COVID-19 cases, while ear symptoms are uncommon⁽⁶⁾. These observations suggest differences in viral spread patterns compared to influenza, SARS, and MERS-CoV.

In the current study, the most common nasal manifestations observed in COVID-19 patients were anosmia/ hyposmia and nasal obstruction. However, nasal discharge was reported in a smaller proportion of patients.

Based on these findings, if an ENT manifestation were to be added to the definition of suspected COVID-19 cases or the COVID-19 checklist, sore throat would be a more suitable choice than nasal discharge. It is important to note that all ENT manifestations associated with COVID-19 are nonspecific, making them easily overlooked, and there are no emergency ENT symptoms such as epistaxis or stridor reported in COVID-19 patients. Post-viral anosmia, a condition characterized by a loss of smell following a viral infection, is a common cause of impaired sense of smell in adults, accounting for approximately 40% of cases of anosmia.

While it is assumed that coronaviruses, including the new COVID-19 virus, can cause

loss of smell in infected patients, the occurrence of this symptom is not definitive⁽⁷⁾. The literature on smell and taste impairments in COVID-19 patients is limited, and there is a lack of peer-reviewed studies supporting a causal link between olfactory loss and COVID-19⁽⁸⁾.

Additionally, many olfactory studies in COVID-19 patients do not provide comprehensive descriptions of the patients' clinical features, which precluded their inclusion in the current study.

In an article published by Minnie et al, it was found that 59% of patients infected with the Covid-19 virus experienced a loss of sense of smell and taste, compared to 18% of those who tested negative for COVID-19. The authors suggested that a concomitant loss of smell and taste, fever, persistent cough, fatigue, and gastrointestinal symptoms could predict a positive COVID-19 test with a specificity of 0.86 and an average sensitivity of 0.54.

Lichen et al.⁽⁹⁾ conducted the first multi-centre peer-reviewed study reporting olfactory disorders in 85.6% of cases. However, it should be noted that they used a questionnaire that focused on the psychosocial burden of olfactory disorders, which could lead to overestimation, especially considering the COVID-19 pandemic and the resulting restrictions on social life.

Kai et al.⁽¹⁰⁾, in a study involving 237 United State patients with COVID-19, found that 73% reported anosmia, with anosmia being the initial presentation in 26.6% of cases. Therefore, it is recommended to consider patients with anosmia, without nasal obstruction or a runny nose, as suspected cases of COVID-19 and advise them to undergo testing or self-isolation.

Interestingly, a majority of COVID-19 patients (66%) reported a full recovery of the smell perception after treatment⁽¹¹⁾.

It is worth-noting that auditory manifestations have not been widely reported in studies of COVID-19, and there is limited literature on auditory complications due to MERS-CoV. In a previous report on MERS-CoV infection ⁽¹²⁾, brainstem involvement was noted, suggesting the possibility of neural hearing problems.

Mustafa et al. ⁽¹³⁾ also found that COVID-19 infection could have adverse effects on cochlear hair cell functions, leading to a decrease in high-frequency pure tone thresholds, even in asymptomatic individuals.

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