

# The Prognostic Impact of Otorhinolaryngology Symptoms on COVID-19 Patients

## Kulak Burun Boğaz Semptomlarının COVID-19 Hastalarında Prognosa Etkisi

E. Deniz GOZEN<sup>a</sup>, Sinem KARA<sup>a</sup>, Rafet YILDIRIM<sup>a</sup>, Eyyup KARA<sup>b</sup>, Umur AKINER<sup>c</sup>, İlker İnanç BALKAN<sup>d</sup>, H. Murat YENER<sup>a</sup>

<sup>a</sup>Department of Otorhinolaryngology-Head and Neck Surgery, İstanbul-Cerrahpaşa University Faculty of Cerrahpaşa Medicine, İstanbul, TURKEY

<sup>b</sup>Department of Audiology, İstanbul-Cerrahpaşa University Faculty of Health Sciences, İstanbul, TURKEY

<sup>c</sup>Department of ENT, Acıbadem Sefakoy Hospital, İstanbul, TURKEY

<sup>d</sup>Department of Infectious Disease, İstanbul-Cerrahpaşa University Faculty of Medicine, İstanbul, TURKEY

**ABSTRACT Objective:** Although corona virus disseminates by aerosol or droplet and colonizes in nasal cavity and nasopharynx, symptoms related to upper respiratory tract are uncommon in coronavirus-disease-2019 (COVID-19). In this report we aimed to classify the patients applying to COVID-19 outpatient clinics according to ear-nose-throat (ENT) specific and COVID-19 specific symptoms and to compare these patients' prognosis. **Material and Methods:** Sixty-five patients with COVID-19 were included to the study. The patients were classified according to their presenting symptoms. The symptom categories were COVID-19 specific (Group 1) and Covid-19+ENT specific (Group 2) symptoms. As specific symptoms of COVID-19; fever, cough, headache, myalgia and dyspnea were assumed. Mild ENT symptoms were also included to this group. As otolaryngology-specific symptoms; dysfunction in smell, nasal congestion, runny nose, sneezing, postnasal drip, sore throat, dysphagia, dysphonia, hearing loss, tinnitus, dizziness/vertigo and aural fullness were considered. C-reactive protein, leukocyte, lymphocyte, platelet levels in peripheral blood, and oxygen saturation levels were also recorded. The symptom scores were analyzed by visual analog scale scoring system. **Results:** The most common presenting symptom of the patients in Group 1 was fever followed by constitutional symptoms and cough, whereas the most common presenting symptom in Group 2 was constitutional followed by myalgia and fever. Olfactory dysfunction was prevalent in the patients in Group 2 with a significant difference. Average nasal symptom scores of the patients in Group 2 were; none: 3, mild: 0, moderate: 25, severe: 12 and the difference was statistically significant. Oral cavity/oropharynx symptoms were again more prevalent in Group 2. The average ear symptom scores of the patients among groups did not differ significantly. Fourteen of the patients in Group 1 had better prognosis and 15 had worse outcome. In Group 2 better prognosis was seen in 25 patients and worse prognosis was detected in 11 patients. **Conclusion:** The evaluation of the parameters concluded that although the patients with ENT predominant symptoms were doing better than the patients with more systemic symptoms, the difference was not statistically significant.

**Keywords:** COVID-19; symptom scores; ENT symptoms; prognosis

**ÖZET Amaç:** Koronavirüs, aerosol veya damlacıkla yayılıp burun boşluğu ve nazofarenkste kolonize olsa da koronavirüs hastalığı-2019 [coronavirus disease-2019 (COVID-19)]'da üst solunum yoluyla ilgili semptomlar nadirdir. Bu çalışmada, COVID-19 polikliniklerine başvuran hastaları kulak-burun-boğaz (KBB) spesifik ve COVID-19 spesifik semptomlara göre sınıflandırmayı ve bu hastaların prognozlarını karşılaştırmayı amaçladık. **Gereç ve Yöntemler:** Çalışmaya, 65 COVID-19 hastası dâhil edildi. Hastalar, başvuru semptomlarına göre sınıflandırıldı. Semptom kategorileri COVID-19'a özgü (Grup 1) ve COVID-19+KBB'ye özgü (Grup 2) olarak ayrıldı. COVID-19'un spesifik semptomları ateş, öksürük, baş ağrısı, kas ağrısı ve nefes darlığı olarak kabul edildi. Hafif KBB semptomları da bu gruba dâhil edildi. KBB'ye özgü semptomlar ise koku bozukluğu, burun tıkanıklığı, burun akıntısı, hapşırma, postnazal akıntı, boğaz ağrısı, yutma güçlüğü, ses kısıklığı, işitme kaybı, kulak çınlaması, baş dönmesi ve kulakta dolgunluk olarak kabul edildi. Periferik kanda bakılan C-reaktif protein, lökosit, lenfosit, trombosit düzeyleri ve oksijen saturasyon düzeyleri de kaydedildi. Semptom skorları vizüel analog skala ile analiz edildi. **Bulgular:** Grup 1'deki hastaların en sık başvuru semptomu ateş, ardından nonspesifik semptomlar ve öksürük iken, Grup 2'deki en sık başvuru semptomu ise nonspesifik semptomlar ve ardından miyalji ve ateş idi. Olfaktör disfonksiyonun Grup 2'deki hastalarda anlamlı olarak daha fazla izlendiği gösterildi. Grup 2'deki hastaların ortalama burun semptom skorları; yok: 3, hafif: 0, orta: 25, şiddetli: 12 olarak görüldü ve fark istatistiksel olarak anlamlı bulundu. Oral kavite/orofarinks semptomları da Grup 2'de aynı şekilde daha yaygın saptandı. Gruplar arasında hastaların ortalama kulak semptom skorları anlamlı farklılık göstermedi. Grup 1'deki hastaların 14'ünde daha iyi prognoz ve 15'inde daha kötü sonuç vardı. Grup 2'de 25 hastada daha iyi prognoz, 11 hastada daha kötü prognoz saptandı. **Sonuç:** Elde edilen parametreler değerlendirildiğinde ulaşılan sonuca göre, KBB baskın semptomları olan hastalar daha sistemik semptomları olan hastalardan daha iyi klinik gidişat gösterse de fark istatistiksel olarak anlamlı bulunmadı.

**Anahtar Kelimeler:** COVID-19; semptom skoru; KBB semptomları; prognoz

**Correspondence:** E. Deniz GOZEN

Department of Otorhinolaryngology-Head and Neck Surgery, İstanbul-Cerrahpaşa University, Faculty of Cerrahpaşa Medicine, İstanbul, TURKEY/TÜRKİYE

E-mail: nazas39@hotmail.com



Peer review under responsibility of Journal of Ear Nose Throat and Head Neck Surgery.

Received: 08 Jul 2020

Received in revised form: 21 Aug 2020

Accepted: 08 Sep 2020

Available online: 30 Oct 2020

1307-7384 / Copyright © 2020 Turkey Association of Society of Ear Nose Throat and Head Neck Surgery. Production and hosting by Türkiye Klinikleri.

This is an open access article under the CC BY-NC-ND license (<https://creativecommons.org/licenses/by-nc-nd/4.0/>).

Since its first identification, COVID-19 has emerged as an urgent and important global healthcare problem. Due to its highly contagious nature, the case number increased rapidly in all over the world and WHO declared COVID19 outbreak as a pandemic on March 11, 2020. Our knowledge of this pandemic is still limited and more data on the prognosis of this disease are needed to furtherly understand and analyze the symptoms and consequences. It is well established that the route of transmission is by droplet or aerosol, but the clinical course and the prognosis of the disease are not predictable.

The symptoms of COVID-19 may be classified according to upper or lower respiratory tract involvement. Symptoms such as sore throat, nasal discharge, nasal congestion, dysfunction in smell and taste, sneezing, difficulty in swallowing and aural complaints can be considered as Ear-Nose-Throat (ENT) specific. Some symptoms such as fever, cough, headache, myalgia have been seen in the vast majority of the patients since the onset of COVID-19 and can be referred to as COVID-19-specific symptoms.<sup>1</sup>

It has been found that there are various clinical forms of this disease, and patients present with various symptoms. In a large series from China, most of the patients with COVID-19 presented with mild symptoms.<sup>2</sup> Although cough and fever are the most common presenting symptoms, upper airway symptoms are less noticeable. In limited number of case series the rate of ENT specific symptoms such as sore throat, nasal congestion and olfactory dysfunction were found to be 11%, 4.8% and 19.4% respectively.<sup>3-5</sup> Otolaryngology specialists should be aware of the presentation of the cases because apart from general symptoms, COVID-19 patients may present with more specific ENT symptoms.

Since most of the viral load was found in nose and nasopharynx and the virus disseminates thereafter, the expected presentation is with otolaryngology symptoms, but it is not true in most of the patients. ENT-specific COVID-19 symptoms have not been considered as prognostic criteria in any of the studies so far.<sup>6</sup> COVID-19 patients with pronounced upper airway symptoms may do better due to local immunity and there may be a relation between the presenting

symptoms and the prognosis of the COVID-19 infection. In this report we aimed to classify the patients applying to COVID outpatient clinics according to ENT specific and COVID specific symptoms and to compare these patients' prognosis.

## MATERIAL AND METHODS

Patients who applied to outpatient clinics in a tertiary hospital with the symptoms of suspected COVID infection were screened by history, fever, total blood count and blood biochemistry, PCR test, thorax CT or both for the confirmation of the diagnosis. Among these, 65 patients (19 female and 46 male, ages ranging between 17-60 with a mean age of 0.12+/-11.49) under 60 years of age without additional comorbidities or chronic disorders were included to the study.

Following the confirmation of COVID-19 diagnosis by PCR test, thorax CT or both, the patients were classified according to their presenting symptoms. The symptom categories were COVID-19 specific (Group 1) and Covid-19+ENT specific (Group 2) symptoms. As specific symptoms of COVID-19; fever, cough, headache, myalgia and dyspnea were assumed. Patients with such symptoms were included in Group 1. Mild ENT symptoms were also included to this group. As otolaryngology-specific symptoms; dysfunction in smell, nasal congestion, runny nose, sneezing, postnasal drip, sore throat, dysphagia, dysphonia, hearing loss, tinnitus, dizziness/vertigo and aural fullness were considered. Patients with aforementioned symptoms were included in Group 2. CRP, leukocyte, lymphocyte, platelet levels in peripheral blood, and oxygen saturation levels were also recorded. The symptom scores were analyzed by visual analogue scale (VAS) scoring system (0:none-10:very severe). Also, for the presentation, the VAS system was converted according to severity such as; 0: none, 1-3: mild, 4-6: moderate, 7-10: severe. The findings in the thorax CT were classified as; 0:no finding, 1: mild, 2: moderate, 3: severe. The patients were treated according to current guidelines and they were strictly followed up. The disease prognosis was considered as better if the patient was not hospitalized, or the patient responded the treatment immediately. Hospitalization, no response to treatment, need for medication change or addition or need for other

treatment modalities were considered as worse prognosis. In the follow-up period the disease prognosis was noted for each patient and correlation between the symptoms and disease prognosis were analyzed.

Statistical analysis was made with SPSS21 program. The symptoms were presented as percentile. For the comparison of the numeric variables Mann Whitney U test was applied. For the analysis of ordinal and nominal parameters chi square and Kolmogorov-Smirnov Test were used. Correlation analysis were made by Spearman analysis.  $p \leq 0.05$  was considered significant.

## RESULTS

Group 1 was composed of 29 patients (5 female, 24 male, with a mean age of  $44.38 \pm 11.32$ ) and Group 2 was composed of 36 patients (14 female, 22 male with a mean age of  $36.69 \pm 10.5$ ). The comparison of gender and ages among the groups revealed significant difference ( $p=0.05$ ,  $p=0.05$  respectively) (Table 1).

The most common *presenting symptom* of the patients in Group 1 was fever followed by constitutional symptoms and cough, whereas the most common presenting symptom in Group 2 was constitutional followed by myalgia and fever (Table 1). The mean *duration of the symptoms* in Group 1 was  $7.3 \pm 4.9$  (2-20 days) and in Group 2 was  $8.08 \pm 7.2$  (1-30 days) without significant difference ( $p=0.62$ ) (Table 1).

*Olfactory dysfunction* was prevalent in the patients in Group 2 with a significant difference ( $p=0.03$ ) (Table 1). 5 patients in Group 1 and 8 patients in Group 2 had anosmia and severe olfactory dysfunction was found in 2 patients in Group 1 and 12 patients in Group 2. The *average nasal symptom scores* of the patients in Group 1; none: 24 and mild: 5. Average nasal symptom scores of the patients in Group 2 were; none: 3, mild: 0, moderate: 25, severe: 12 and the difference was statistically significant (Table 1).

*Oral cavity/Oropharynx symptoms* were again more prevalent in Group 2 (24 of the patients had sore throat or dysphagia) being statistically significant (Table 1). *Dysphonia* was detected in 3 patients of

Group 1 and in 5 patients in Group 2 without significant difference (Table 1).

The *average ear symptom scores* of the patients among groups did not differ significantly (Table 1). 2 patients in Group 1 and 10 patients in Group 2 had varying degree of ear symptoms tinnitus being the most frequent symptom (Table 2).

*Fever* was detected in 23 patients in Group 1 and in 20 patients in Group 2, where difference was found significant (Table 1). In Group 1 *cough* was seen in 21 patients and in Group 2 cough was detected in 24 patients without significant difference (Table 1). In Group 1 headache and myalgia were seen in 21 and 29 patients respectively. *Headache and myalgia* in Group 2 were 27 and 31 patients respectively, none being significant (Table 1). *Dyspnea* was seen in 21 patient (Group 1) and in 22 patients (Group 2) without significant difference (Table 1).

*CRP* of the patients in Group 1 and Group 2 were  $11.6 \pm 14.1$  and  $7.9 \pm 12.7$  respectively. Statistical analysis did not reveal significant difference among the groups ( $p=0.3$ ) (Table 1). *Mean leukocyte count* of the patients in Group 1 and 2 were  $6292.3 \pm 1364.3$  and  $7200 \pm 1663.3$  respectively with significant difference ( $p=0.03$ ) (Table 1). *Mean lymphocyte count* of the patients in Group 1 and 2 were  $7200 \pm 1663.3$  and  $2400 \pm 671.1$ , again with significant difference ( $p=0.002$ ) (Table 1). *Mean platelet count* was  $308326.9 \pm 99470.7$  in Group 1 and was  $337392.8 \pm 125612.3$  in Group 2 and the difference was not significant statistically (Table 1). *Mean O2 saturation* in Group 1 was  $95.1 \pm 2.8$  and in Group 2 was  $95.7 \pm 2.5$  without significant difference (Table 1).

*Thorax CT findings* were; none: 1, mild:7, moderate:17 and severe:4 in Group 1 and none:9, mild:6, moderate:16 and severe:1 in Group 2. The difference between the groups was significant statistically ( $p=0.013$ ,  $r=-0.32$ ) (Table 1).

14 of the patients in Group 1 had better prognosis and 15 had worse outcome. In Group 2 better prognosis was seen in 25 patients and worse prognosis was detected in 11 patients. The analysis revealed no statistically significance but the patients in Group 2 were doing better than Group 1 (Table 1).

**TABLE 1:** Demographics, CRP, blood count, O2 saturation and symptoms among groups. p denotes statistical analysis, and r presents Spearman correlation value. Bold and underlined cases are significant values.

	Group 1 (COV) N=29	Group 2 (COV+ENT) (N=36)	P	R
Gender (F/M)	5F, 24M	14F, 22M	<b><u>0.05</u></b>	
Age	44.38+/-11.32	36.69+/-10.5	<b><u>0.05</u></b>	
CRP	11,6+/-14.1	7,9+/-12.7	0.3	
Leukocyte	6292.3+/-1364.3	7200+/-1663.3	<b><u>0.03</u></b>	
Lymphocyte	7200+/-1663.3	2400+/-671.1	<b><u>0.002</u></b>	
PLT	308326.9+/-99470.7	337392.8+/-125612.3	0.6	
O2 Saturation	95.1+/-2.8	95.7+/-2.5	0.48	
Duration of symptoms (days)	7.3+/-4.9 (2-20 days)	8.08+/-7.2 (1-30 days)	0.62	
Presenting symptom	Fever: 18 Constitutional:10 Cough: 10 Headache:5 Myalgia:4 Dyspnea: 4 Vomiting/diarrhea: 2	Fever:8 Constitutional:12 Olfactory: 5 Cough: 6 Myalgia: 11 Sore throat: 4 Headache: 5 Vomiting/diarrhea: 3		
Olfactory Dysfunction	None:17 Mild: 4 Moderate: 1 Severe:2 Anosmia:5	None:11 Mild: 2 Moderate: 3 Severe: 12 Anosmia: 8	<b><u>0.03</u></b>	0.23
Average Nasal	None:24 Mild: 5	None: 3 Mild: 0 Moderate: 25 Severe: 8	<b><u>0.001</u></b>	0.57
Average oral cavity/oropharynx symptom score	None:15 Mild: 14	None:12 Mild: 0 Moderate: 20 Severe: 4	<b><u>0.016</u></b>	0.29
Dysphonia	None:26 Mild:3	None: 31 Mild: 0 Moderate: 4 Severe:1	0.61	0.1
Average ear symptom score	None:27 Mild: 2	None:26 Mild: 0 Moderate: 9 Severe: 1	0.49	0.28
Fever	None:6 Mild: 0 Moderate: 3 Severe: 20	None:16 Mild: 0 Moderate: 4 Severe: 16	<b><u>0.04</u></b>	-0.26
Cough	None:8 Mild: 6 Moderate: 7 Severe: 8	None:12 Mild: 4 Moderate: 3 Severe: 17	0.31	0.11
Headache	None:8 Mild: 7 Moderate: 6 Severe:8	None:9 Mild:4 Moderate: 7 Severe: 16	0.47	0.19
Myalgia	None:0 Mild:6 Moderate: 9 Severe:14	None:5 Mild: 2 Moderate: 12 Severe: 17	0.48	0.01
Dyspnea	None:8 Mild: 8 Moderate:7 Severe: 6	None:14 Mild:6 Moderate: 8 Severe: 8	0.68	-0.028
Thorax ct	None: 1 Mild:7 Moderate:17 Severe: 4	None: 9 Mild:10 Moderate:16 Severe: 1	<b><u>0.013</u></b>	-0.32
Prognosis	Better:14 Worse:15	Better:25 Worse:11	<b><u>0.08</u></b>	-0.18

**TABLE 2:** Detailed symptom scores, Thorax CT findings and prognosis of all patients.

TABLE 2: Detailed symptom scores, Thorax CT findings and prognosis of all patients.					
Olfactory Dysfunction	Nasal Obstruction	Nasal Discharge	Sneezing	Postnasal Drip	Average Nasal Symptom Score
None: 28 (43.1%)	None: 42 (64.6%)	None: 49 (75.4%)	None: 50 (76.9%)	None: 48 (73.8%)	None: 26 (40%)
Mild: 6 (9.3%)	Mild: 6 (9.3%)	Mild: 7 (10.8%)	Mild: 11 (17%)	Mild: 5 (7.7%)	Mild: 5 (7.7%)
Moderate: 4 (6.1%)	Moderate: 12 (18.5%)	Moderate: 5 (7.7%)	Moderate: 1 (1.5%)	Moderate: 5 (7.7%)	Moderate: 25 (38.5%)
Severe: 14 (21.5%)	Severe: 5 (7.7%)	Severe: 4 (6.1%)	Severe: 3 (4.6%)	Severe: 7 (10.8%)	Severe: 8 (12.3%)
Anosmia: 13 (20%)					
<b>Average OF/OC</b>					
<b>Sore Throat</b>	<b>Dysphagia</b>	<b>Symptom Score</b>	<b>Dysphonia</b>		
None: 31 (47.7%)	None: 52 (80%)	None: 27 (41.5%)	None: 57 (87.7%)		
Mild: 16 (24.6%)	Mild: 5 (7.7%)	Mild: 14 (21.5%)	Mild: 3 (4.6%)		
Moderate: 11 (16.9%)	Moderate: 3 (4.6%)	Moderate: 20 (30.7%)	Moderate: 4 (6.15%)		
Severe: 7 (10.7%)	Severe: 5 (7.7%)	Severe: 4 (6.1%)	Severe: 1 (1.5%)		
<b>Average Ear</b>					
<b>Hearing Loss</b>	<b>Tinnitus</b>	<b>Balance Disorder</b>	<b>Fullness</b>	<b>Symptom Score</b>	
None: 63 (96.9%)	None: 57 (87.7%)	None: 62 (95.4%)	None: 59 (90.8%)	None: 53 (81.5%)	
Mild: 0	Mild: 4 (6.2%)	Mild: 0	Mild: 0	Mild: 2 (3%)	
Moderate: 0	Moderate: 2 (3.1%)	Moderate: 1 (1.5%)	Moderate: 3 (4.5%)	Moderate: 9 (13.8%)	
Severe: 2 (3.1%)	Severe: 2 (1.5%)	Severe: 1 (1.5%)	Severe: 3 (4.5%)	Severe: 1 (1.5%)	
<b>Cough</b>	<b>Fever</b>	<b>Headache</b>	<b>Myalgia</b>	<b>Dyspnea</b>	
None: 20 (30.8%)	None: 22 (33.8%)	None: 17 (26.2%)	None: 5 (7.7%)	None: 22 (33.8%)	
Mild: 10 (15.3%)	Mild: 0	Mild: 11 (18.9%)	Mild: 8 (12.3%)	Mild: 14 (21.5%)	
Moderate: 10 (15.3%)	Moderate: 7 (10.8%)	Moderate: 13 (20%)	Moderate: 21 (32.3%)	Moderate: 15 (23%)	
Severe: 25 (38.4%)	Severe: 36 (55.3%)	Severe: 24 (36.9%)	Severe: 31 (47.7%)	Severe: 14 (21.5%)	
<b>Thorax CT</b>	<b>Prognosis</b>				
None: 10 (15.3%)	Better: 39 (58.5%)				
Mild: 17 (26.6%)	Worse: 26 (41.5%)				
Moderate: 33 (51.6%)					
Severe: 5 (7.8%)					

Table 2 presents the detailed symptom scores, Thorax CT findings and prognosis in all of the patients. Among those olfactory dysfunction, sore throat, cough, fever, headache, myalgia and dyspnea were more frequently noted. 17 patients had mild, 33 had moderate and 5 had severe pulmonary infiltration in Thorax CT. Outcomes were better in 39 patients and worse in 26 patients.

## DISCUSSION

Since its first identification in China in December 2019, the SARS-CoV-2 virus has spread rapidly and has caused a serious pandemic all over the world. The main transmission mechanism of the SARS-CoV-2 virus was well studied and demonstrated to be respi-

ratory droplet and direct contact.<sup>7,8</sup> It is expected that as the transmission is by droplet and as the viral colonization of corona virus is mostly in nasal cavity and nasopharynx, upper respiratory symptoms should be more prevalent in COVID-19. However, upper airway symptoms, or ENT-related symptoms, are uncommon in COVID-19.

In this study we questioned the patients about their presenting and most prevalent symptoms and classified the patients according to their complaints. In Group 1 we included the patients with COVID-19 specific symptoms and mild upper respiratory tract complaints. In the Group 2 patients with more prevalent ENT symptoms were recruited. We compared the effect of presenting and most prevalent symptoms in-

cluding the symptoms of upper respiratory tract on prognosis COVID-19. We hypothesized that the patients with prevalent ENT symptoms may be doing better in the clinical course of the disease. In our data and clinical observation, we found that patients with ENT-specific symptoms showed a better prognosis. However, we did not find a statistically significant difference.

Although SARS-CoV-2 is an RNA virus that affects the upper respiratory tract, in most cases, upper airway symptoms are not as common as other symptoms.<sup>9</sup> In the study of Chen, which included 99 patients, the most common symptoms were fever (82%), cough (81%) and dyspnea (31%). In this study, sore throat (5%) and rhinorrhea (4%) were reported as upper respiratory symptoms (10). The most common symptoms in the review of 660 cases were reported as fever (88.7%), cough (57.6%) and dyspnea (45.6%). COVID-19 can manifest itself with various symptoms and with different clinical courses. The disease course may be mild, moderate and severe. Chinese CDC has classified the disease according to the severity of clinical presentation as mild (non-pneumonia and mild pneumonia), severe (dyspnea, respiratory frequency  $\geq 30$ /min, blood oxygen saturation (SpO<sub>2</sub>)  $\leq 93\%$  and/or lung infiltrates  $>50\%$  within 24 to 48 hours) and critical (respiratory failure, septic shock, and/or multiple organ dysfunction).<sup>2</sup> The disease can also present with many different symptoms. COVID-19 may present symptoms such as; conjunctival congestion, nasal congestion, headache, cough, sore throat, sputum production, fatigue, hemoptysis, shortness of breath, nausea, vomiting, diarrhea, myalgia, arthralgia and chills.<sup>3</sup>

In this series the most common initial symptoms were fever, cough and myalgia. The symptoms that have been seen throughout the course of the disease were myalgia (60/65), headache (48/65), cough (45/65), fever (43/65), dysfunction of smell (37/65) and sore throat (34/65). The incidence of nasal obstruction in all of the patient groups was 35%, nasal discharge was 24%, sneezing was 23%. When severe and moderate scores were considered these symptoms were even smaller (Table 2). As one of the most frequent symptoms of upper respiratory infections

sore throat was detected in only 18% of our patients. Also, around 8% of our patients experienced hoarseness in their clinical course (Table 2). Most common symptoms in our study were symptoms other than upper respiratory symptoms. While there is no definitive explanatory reason in this regard in the literature, our hypothesis is that the virus is transported to the lower respiratory tract without being colonized in the upper respiratory tract for a long time. It is noteworthy that our patients complained about auditory symptoms that was not mentioned in previous studies regarding COVID-19. The most common aural symptom was tinnitus followed by fullness of the ear (Table 2). This may be due to nasopharyngeal inflammation caused by the virus itself or may be due to O<sub>2</sub> treatment via nasal canula in some patients.

Real-time PCR is used as a clinically accepted diagnostic tool in detecting the SARS-CoV-2 virus.<sup>11</sup> However, in Long's study although RT-PCR sensitivity was reported as 83.3%, the sensitivity of Thorax CT was reported as 97.2%.<sup>12</sup> In our study we used PCR and thorax CT to all the patients and positive findings in one of the tests was accepted as diagnostic. However this may cause false evaluation of the data and the results but up-to-date these tests are accepted as the standard of diagnosis. Due to the reported high false negativity rate of RT-PCR and the high sensitivity rate of Thorax CT, we used both diagnostic methods simultaneously in our clinic.<sup>13</sup>

Many prognostic criteria have been proposed in the literature so far to determine the clinical course of COVID-19, but none has been considered as definitive. Age is an important factor for disease outcome. Older patients and those with additional co-morbidity experience the disease more severely.<sup>16</sup> Other proposed parameters include laboratory values such as CRP, leukocyte, lymphocyte, platelet, IL-8 levels, as well as clinical parameters such as fever, oxygen saturation, and imaging methods such as Thorax CT.<sup>6</sup> Oxygen saturation in the peripheral blood of patients has also been reported as a prognostic factor.<sup>14</sup> Laboratory findings mentioned in these studies were albumin, CRP, LDH, Lymphocyte, AST, ALT, Creatinine kinase, Leuko-

cyte, Bilirubin and Creatinine.<sup>15</sup> The laboratory tests we used in our study were CRP, leukocyte, lymphocyte and platelet counts. We found that leukocyte levels were significantly lower and lymphocyte levels were significantly higher in Group 1 (patients who presented COVID-19-specific symptoms more than ENT-specific symptoms). There was no statistically significant difference in CRP and Platelet levels.

## CONCLUSION

In this study, 65 patients who were diagnosed as COVID-19 were evaluated by a questionnaire to classify patients according to their symptoms. The evaluation of the parameters concluded that although the patients with ENT predominant symptoms were doing better than the patients with more systemic symptoms, the difference was not statistically significant.

## ETHICAL STATEMENT

The study has ethical approval from Ethics Committee and the study has been found proper (Cerrahpaşa Faculty of Medicine Dean's Office Clinical Research Ethics Committee, 07.05.2020, Number: 59910).

We have informant consent form from patients.

## MAIN POINTS

- There are various clinical forms of COVID-19, and patients present with various symptoms.

- Symptoms related to upper respiratory tract are uncommon in COVID-19.

- In this report we classified the patients according to ENT specific and COVID specific symptoms and compared these patients' prognosis.

- The patients with ENT predominant symptoms were doing better than the patients with more systemic symptoms but difference was insignificant.

## Source of Finance

*During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.*

## Conflict of Interest

*No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.*

## Authorship Contributions

**Idea/Concept:** E. Deniz Gözen; **Design:** E. Deniz Gözen, İlker İnanç Balkan, H. Murat Yener; **Control/Supervision:** İlker İnanç Balkan, H. Murat Yener; **Data Collection and/or Processing:** E. Deniz Gözen, Sinem Kara, Rafet Yıldırım; **Analysis and/or Interpretation:** Eyyüp Kara, Umur Akner; **Literature Review:** Rafet Yıldırım, Eyyüp Kara, Umur Akner; **Writing the Article:** E. Deniz Gözen, Sinem Kara, Eyyüp Kara, Umur Akner, H. Murat Yener; **Critical Review:** İlker İnanç Balkan, H. Murat Yener; **Materials:** Sinem Kara, Rafet Yıldırım.

## REFERENCES

- Lovato A, de Filippis C. Clinical presentation of COVID-19: a systematic review focusing on upper airway symptoms. *Ear Nose Throat J.* 2020;13:145561320920762. [Crossref] [PubMed]
- Wu Z, McGoogan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72314 cases from the Chinese center for disease control and prevention. *JAMA.* 2020;7:323(13):1239-42. [Crossref] [PubMed]
- Wu J, Wu X, Zeng W, Guo D, Fang Z, Chen L, et al. Chest CT Findings in patients with coronavirus disease 2019 and its relationship with clinical features. *Invest Radiol.* 2020;55(5):257-61. [Crossref] [PubMed] [PMC]
- Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al. Clinical characteristics of coronavirus disease 2019 in China. *N Engl J Med.* 2020;30:382(18):1708-20. [Crossref] [PubMed] [PMC]
- Vaira LA, Salzano G, Deiana G, De Riu G. Anosmia and ageusia: common findings in COVID-19 patients. *Laryngoscope.* 2020;130(7):1787. [Crossref] [PubMed] [PMC]
- Wynants L, Van Calster B, Collins GS, Riley RD, Heinze G, Schuit E, et al. Prediction models for diagnosis and prognosis of covid-19 infection: systematic review and critical appraisal. *BMJ.* 2020;7:369:m1328. [Crossref] [PubMed]
- Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, et al. Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. *N Engl J Med.* 2020;26:382(13):1199-1207. [PubMed]
- Chan JFW, Yuan S, Kok KH, To KKW, Chu H, Yang J, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *Lancet.* 2020;15:395(10223):514-23. [Crossref] [PubMed]

9. Rothan HA, Byrareddy SN. The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak. *J Autoimmun.* 2020; 109:102433.[Crossref] [PubMed] [PMC]
10. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet.* 2020;15;395(10223):507-13.[Crossref] [PubMed]
11. Hong KH, Lee SW, Kim TS, Huh HJ, Lee J, Kim SY, et al. Guidelines for laboratory diagnosis of coronavirus disease 2019 (COVID-19) in Korea. *Ann Lab Med.* 2020;40(5): 351-60.[Crossref] [PubMed] [PMC]
12. Long C, Xu H, Shen Q, Zhang X, Fan B, Wang C, et al. Diagnosis of the coronavirus disease (COVID-19): rRT-PCR or CT? *Eur J Radiol.* 2020;126:108961.[Crossref] [PubMed] [PMC]
13. Ai T, Yang Z, Hou H, Zhan C, Chen C, Lv W, et al. Correlation of chest CT and RT-PCR testing in coronavirus disease 2019 (COVID-19) in China: a report of 1014 cases. *Radiology.* 2020;296(2):E32-E40. [Crossref] [PubMed] [PMC]
14. Xie J, Hungerford D, Chen H, Abrams ST, Li S, Wang G, et al. Development and external validation of a prognostic multivariable model on admission for hospitalized patients with COVID-19. *medRxiv.* 2020;7:20045997. [Crossref]
15. Rodriguez-Morales AJ, Cardona-Ospina JA, Gutiérrez-Ocampo E, Villamizar-Pe-a R, Holguin-Rivera Y, Escalera-Antezana JP, et al. Clinical, laboratory and imaging features of COVID-19: a systematic review and meta-analysis. *Travel Med Infect Dis.* 2020;34: 101623.[Crossref] [PubMed] [PMC]