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Original Research

Comparison of the Otolaryngological Symptoms of Laboratory-Confirmed and Clinically Diagnosed COVID-19 Patients

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Abstract

Objectives: Our aim is to determine prevalence, severity, duration of otorhinolaryngologic symptoms related to coronavirus disease 2019 (COVID-19), and correlation between the test results obtained by oronasopharyngeal swab and the symptoms of these regions by evaluating differences in ear, nose, and throat (ENT) symptoms between laboratory-confirmed COVID-19 patients and clinically and computed tomography (CT)-diagnosed COVID-19 patients.

Methods: The study enrolled patients with a positive polymerase chain reaction (PCR) test diagnosed with COVID-19 that grouped as PCR (+), and those with repeated negative PCR tests but COVID-19 Reporting and Data System (CO-RADS) chest CT findings with high (CO-RADS 5) or very high (CO-RADS 6) similarity to COVID-19 that grouped as PCR(–)/CT(+). Demographic features, general symptoms, and otorhinolaryngological symptoms and severity of disease were evaluated and compared.

Results: The most common ENT symptoms in the PCR(+) group were loss of taste (n=77), loss of smell, and sore throat with respective frequencies of 34.5%, 31.8%, 26.0%, and in PCR(–) CT (+) group loss of taste, loss of smell, and sore throat with respective frequencies 24.6%, 21.1%, and 18.4%. ENT symptom rates were found higher in PCR (+) group (65.0%) according to PCR(–)/CT(+) group (49.1%) with statistically significant difference (p=0.008). Loss of smell rates were found higher in PCR (+) group according to PCR(–)/CT(+) group with statistically significant difference (p=0.037).

Conclusion: Loss of smell and taste were most common ENT symptoms in laboratory-confirmed COVID-19 cases. The presence of COVID-19 should definitely be considered in patients presenting with sudden loss of smell or taste. In addition, loss of smell and otolaryngologic symptoms were more common in laboratory-confirmed COVID-19 according to clinically and computed tomograpy diagnosed COVID-19 cases. There can be a correlation between positive sample region and symptom region. Location of symptoms must be considered for decision of sampling location.

Keywords: Anosmy, clinically diagnosed, computed chest tomography, coronavirus disease 2019, laboratory-confirmed, otolaryngological symptoms, smell loss

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Globally, health-care professionals are struggling with a new form of coronavirus, the first case of which was recorded in Wuhan, China on December 5, 2019.[1] This novel coronavirus was initially called 2019-nCoV, and later SARS-CoV-2; the World Health Organization (WHO) named the disease that it causes coronavirus disease 2019 (COVID-19). Following its rapid global spread, the WHO declared the SARS-CoV-2 epidemic a pandemic on March 10, 2020.[2,3] The disease can be asymptomatic, but may start with atypical pneumonia and progress to severe respiratory failure or multiple organ failure.[4,5] The virus enters the body through the upper respiratory tract mucosa and spreads through the lower respiratory tract, also affecting the gastrointestinal system and, in some cases, even the neurological and cardiovascular systems. These multisystem effects cause different symptoms. While fever, fatigue, cough, and dyspnea are the main symptoms, gastrointestinal (diarrhea and vomiting) and otorhinolaryngological (anosmia-hyposmia, loss of taste, sore throat, headache, runny nose, nasal congestion, and dizziness) symptoms may also develop.[6-9]

To diagnose COVID-19, SARSCoV-2 RNA is most commonly detected by reverse transcription polymerase chain reaction (RT-PCR) in nasopharyngeal or oropharyngeal swabs. Despite being the reference standard, there are many downsides to RT-PCR such as limited global access to kits, frequent false-negative results, and an undesirable delay in diagnosis, making the efficacy of this test suboptimal.[10,11] Antibody tests such as SARS-CoV-2 IgG-IgM and S1 spike receptor-binding domain antibody can be used, but only from the 2nd week of symptoms onward. Moreover, their sensitivity and specificity remain controversial.[12] Therefore, computed tomography (CT) has been invaluable for identifying patients with COVID-19.[13,14] Several initial studies reported that chest CT was superior to RT-PCR,[13-16] while others suggested that CT should never be used as a first-line diagnostic tool, with RT-PCR remaining as the preferred test.[13,17,18] The Dutch Radiological Society developed the COVID-19 Reporting and Data System (CO-RADS) for standardizing chest findings. Studies showed that CO-RADS has a high sensitivity (90–95%) and specificity (up to 87.2%) for diagnosing COVID-19.[13,17,18] Negative RT-PCR in patients strongly suspected of having COVID-19 is an unresolved issue. The reasons for the variation in symptoms and clinical course are not yet fully understood. Here, we evaluated differences in ear, nose, and throat (ENT) symptoms and the clinical course between laboratory-confirmed COVID-19 patients and patients clinically suspected of having COVID-19 according to the CO-RADS system, but with repeated negative RT-PCR results. We evaluated the differences in symptoms between the two groups to determine the symptoms that support a diagnosis of COVID-19 in PCR-negative patients, and to identify reasons for RT-PCR negativity.

Methods

This cross-sectional study was conducted at University of Health Science Sisli Hamidiye Etfal Traning and Research Hospital after the Institutional ethics Committee approved the research protocol (Date: December 12, 2020; Approval No. 3014). Informed consent was obtained from all participants. The study was conducted in accordance with the Declaration of Helsinki. We searched the hospital database for adults (aged >18 years) who were hospitalized between March 2020 and May 2020 with a retrospective diagnosis or suspicion of COVID-19. We obtained data for 13,011 patients. The study enrolled patients with a positive PCR test diagnosed with COVID-19, and those with repeat negative PCR tests but CO-RADS chest CT findings with high (CO-RADS 5) or very high (CO-RADS 6) similarity to COVID-19 (Fig. 1).[17] Patients were excluded if they were younger than 18 years, could not be reached, refused to participate, could not complete the survey due to underlying health conditions, or were PCR(–) with chest findings of CO-RADS 3 or below. Ultimately, the study enrolled 177 men and 160 women. Figure 2 summarizes the enrollment process.

We determined whether the patients had ENT symptoms, such as frontal headache, nasal congestion, runny nose, sore throat, dry throat, loss of smell, loss of taste, ear pain, dizziness, hearing loss, or facial paralysis. We also evaluated general symptoms such as cough, fatigue, dyspnea, and fever, which are not ENT-specific. Each patient was contacted by the authors (in person if the patient was still hospitalized, and by phone if they had been discharged). All patients provided informed consent. If the patient had been discharged before the interview, consent forms were completed online. The author conducting the interview

	Level of suspicion for pulmonary involvement of COVID-19	Summary
CO-RADS 0	not interpretable	scan technically insufficient for assigning a score
CO-RADS 1	very low	normal or non-infectious
CO-RADS 2	low	typical for other infection but not COVID-19
CO-RADS 3	equivocal/ unsure	features compatible with COVID-19, but also other diseases
CO-RADS 4	high	suspicious for COVID-19
CO-RADS 5	very high	typical for COVID-19
CO-RADS 6	proven	RT-PCR positive for SARS-CoV-2

Figure 1. CO-RADS classification.

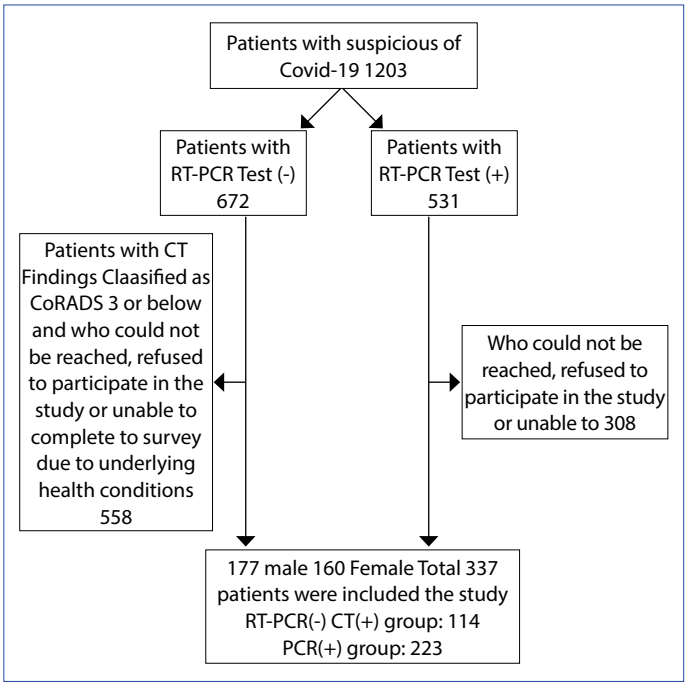

Figure 2. Patient enrollment process and clinical distribution of patients.

completed the survey form; patients were not asked to fill it in themselves. The authors asked the patients to describe their symptoms in detail. If the patient had experienced a symptom for more than 2 months before the hospital referral, it was considered unrelated to COVID-19. Symptom severity was assessed using a visual analog scale (VAS; 0–10), with 0 denoting "no symptoms" and 10 "severe symptoms." The patients were asked to consider the time when symptoms were at their worst. They were also asked about the onset time of the symptoms, to assess symptom duration and time from onset to diagnosis. We classified patients according to disease severity, as directed by national interim guidelines and WHO interim clinical management guidelines (Table 1).[19,20] We classified patients with mild and moderate disease into the moderate group, and those with severe and critical disease into the severe group.

The chest CT findings of all patients were classified according to the CO-RADS classification by same the radiologist (Fig. 1).[17] The PCR(–)/CT(+) patients with CO-RADS 4–5 were included in the study. In our PCR(+) group, the patients were rated as CO-RADS 6 regardless of their CT findings. Typical chest CT findings for COVID-19 are multifocal ground-glass opacities, peripheral and basal distribution, rounded and vague demarcation, vascular thickening, the crazy paving pattern, reverse halo signs, spider web, and ground glass with consolidations, as defined in the CO-RADS classification.[17] All patients with suspected COVID-19 were managed according to the interim guidelines of the Ministry of Health of Turkey Study Board. After training, residents or attending doctors collected nasopharyngeal and oropharyngeal swabs following the interim guidelines. All samples were immediately taken for laboratory evaluation in accordance with the cold chain. Specimens were tested for the presence of SARS-CoV-2 RNA by nucleic acid amplification tests (RT-PCR and nucleic acid sequence analysis as necessary) in the General Directorate of Public Health Microbiology Reference Laboratory.[19]

The relationships among disease severity, RT-PCR findings, chest CT findings, and symptoms were evaluated.

Statistical Analysis

SPSS 15.0 for Windows software (SPSS Inc., Chicago, Il, USA) was used for the statistical analysis. Descriptive statistics included numbers and percentages for categorical variables and median and interquartile range for numeric variables. Numeric variables of two independent groups were compared with the Mann-Whitney U test, since the distributions were not normal. Rates of symptoms were compared between the groups with the Chi-square test. $P<0.05$ was taken to indicate statistical significance.

Results

There were 64 males and 50 females in the RT-PCR(–)/CT(+) group and 113 and 110, respectively, in the PCR(+) group; the difference was not significant (p=0.342). The mean age of the RT-PCR(–)/CT(+) patients was 44 years (range: 52–65.25 years) and that of the PCR(+) patients was 36 years (range: 51–62 years); the PCR(–)/CT(+) patients were significantly (p=0.046) older. In the PCR(–)/CT(+) group, 70 (61.4%) patients were classified as CO-RADS 5 and 44 (38.6%) as CO-RADS 4. In the PCR(+) group, 55 (24.7%) patients had no CT imaging data; the other 168 (75.3%) were classified as CO-RADS 6 (Table 2).

Table 1. Disease severity classification criteria[20]

Mild	Symptomatic patients meeting the case definition for COVID-19 without evidence of viral pneumonia or hypoxia.
Moderate	Adolescent or adult with clinical signs of pneumonia (fever, cough, dyspnoea, fast breathing) but no signs of severe pneumonia, including SpO^2 ≥90% on room air
Severe	Adolescent or adult with clinical signs of pneumonia (fever, cough, dyspnoea, fast breathing) plus one of the following: respiratory rate > 30 breaths/min; severe respiratory distress; or SpO^2 <90% on room air
Critical	Patients with Acute respiratory distress syndrome (ARDS), Sepsis or Septic Shock or Acute Thrombosis

Table 2. Comparison of demographic data and clinical course of patients between PCR(–), CT (+), and PCR(+) patients groups and computerized chest tomography findings of patients

	PCR(-) CT (+)	PCR (+)	p
Age Median (IQR)	44 (52–65.25)	36 (51–62)	0.046
Gender n (%)			
Male	64 (56.1)	113 (50.7)	0.342
Female	50 (43.9)	110 (49.3)	
CT Findings n (%)			
CO-RADS 4	44 (38.6)		
CO-RADS 5	70 (61.4)		
Co-RADS 6		168 (75.3)	
No CT imagining		55 (24.7)	

n: Number; CT: Computerized Chest Tomography; PCR: Polymerase chain reaction for SARSCoV-2 RNA; CO-RADS: COVID-19 Reporting and Data System for standardized assessment of pulmonary involvement of COVID-19 on non-enhanced chest CT Susp: Suspicious.

In the PCR(–)/CT(+) group, 56 patients (49.1%) had at least one ENT symptom, compared with 145 (65.0%) in the PCR(+) group; the difference was significant (p=0.008). ENT symptoms in the PCR(+) group included loss of taste (n=77, 34.5%), loss of smell (n=71, 31.8%), sore throat (n=58, 26.0%), nasal congestion (n=37, 16.6%), dry throat (n=36, 16.1%) runny nose (n=26, 11.7%), frontal headache (n=24, 10.8%), ear pain (n=6, 2.7%), dizziness (n=5, 2.2%), and hearing loss (n=2, 0.9%). ENT symptoms in the PCR(–)/CT(+) patients included loss of taste (n=28, 24.6%), loss of smell (n=24, 21.1%), sore throat (n=21, 18.4%), frontal headache (n=16, 14.0%), dry throat (n=15, 13.2%), nasal congestion (n=11, 9.6%), runny nose (n=9, 7.9%), ear pain (n=4, 3.5%), dizziness (n=4, 3.5%), and facial paralysis (n=3, 2.6%). All otolaryngological symptoms were more frequent in the PCR(+) group, except for facial palsy, frontal headache, ear pain, and dizziness. The rates of loss of smell were found higher in PCR (+) group with statistically difference (p=0.037). The rates of facial palsy (p=0.038), mean duration of throat dryness (p=0.027), loss of smell (p=0.005), and loss of taste (p=0.018) were significantly higher in the PCR(–)/CT(+) patients.

General symptoms included fatigue (n=159, 71.3%), cough (n=121, 54.3%), fever (n=113, 50.7%), and dyspnea (n=84, 37.7%) in PCR(+) patients and fatigue (n=91, 79.8%), cough (n=80, 70.2%), dyspnea (n=73, 64.0%), and fever (n=40, 35.1%) in PCR(–)/CT(+) patients. PCR(–)/CT(+) patients had a significantly higher cough (p=0.005) and dyspnea (p<0.001) than PCR(+) patients, but a lower of fever symptom (p=0.007) (Table 3).

Moderate disease was present in 178 (79.8%) PCR(+) patients and 104 (91.4%) PCR(–)/CT(+) patients, while severe disease was seen in 45 (20.2%) and 10 (8.8%) patients, respectively. The rate of severe disease was significantly higher in PCR(+) patients (p<0.001). The rate of severe disease was significantly lower in patients with loss of smell (p=0.014), and higher in those with dizziness (p=0.007) and hearing loss (p=0.026). In terms of general symptoms, the rate of severe disease was significantly higher in patients with fever (p=0.017), fatigue (p=0.037), and dyspnea (p<0.001) (Table 4).

Discussion

Although the COVID-19 pandemic has been ongoing worldwide for more than a year, diagnosing the disease remains difficult. The most commonly used diagnostic method for identifying genetic material from SARS-CoV-2 is RT-PCR, which reverse transcribes the viral genetic material (RNA) to complementary DNA (cDNA) and amplifies cDNA regions. RT-PCR is considered the gold standard for diagnosing SARS-CoV-2 infection; however, its sensitivity is low (61~70%), although the specificity is high (95%).[21] In patients with clinical findings consistent with COVID-19 but repeated negative RT-PCR tests, treatment and isolation can be difficult. CT can be used as an auxiliary diagnostic tool in these patients. After the Dutch Radiological Society developed CO-RADS for standardization, it became a valuable tool for evaluating suspected cases,[17] with a sensitivity of 61–99% and specificity of 24–94%.[17,22] Thus, we used the CO-RADS classification to strengthen the clinical diagnosis of COVID-19 in PCR(–) patients.

Many factors can interfere with the RT-PCR test; these are related to the virus, the method itself (collection and handling of the material), and the viral load of the sample (which depends on the type of material collected, duration of symptoms, and disease severity).[21] In our study, all RT-PCR samples were taken by trained doctors and immediately evaluated in the laboratory in accordance with the cold chain, to minimize the influence of the above-listed factors. All of our RT-PCR samples were taken from the upper respiratory tract mucosa (nasopharynx and oropharynx), where the viral load in the upper airway affects the results. In our patients, the incidence of ENT symptoms was significantly higher in the PCR(+)than PCR(–)/CT(+) group, especially the rate of loss of smell. There were also significant differences in the rates of coughing and dyspnea. The findings of lower rates of upper airway symptoms and higher rates of lower airway symptoms in RT-PCR-negative patients with suspected COVID-19 indicate that the viral load in the upper respiratory tract may be low in these patients. The virus can be detected in asymptomatic individuals, but their viral loads are lower than in symptomatic patients.[23-25] SARS-CoV-2 also can be detected in sputum, bronchoalveolar

Table 3. Comparison of general symptoms and ear, nose, and throat symptoms, their severity, and duration between the PCR (–), CT (+), and PCR (+) patients groups

	PCR(–) CT (+)	PCR (+)	p
ENT symptoms n (%)			
(–)	58 (50.9)	78 (35.0)	0.008
(+)	56 (49.1)	145 (65.0)	
Frontal Headache n (%)	16 (14.0)	24 (10.8)	0.270
Symptom Severity (1–10) Median (IQR)	4 (5–6)	4.25 (5–8)	0.265
Symptom Duration Median (IQR)	3.5 (5–7)	3.25 (5–10)	0.905
Nasal Congestion n (%)	11 (9.6)	37 (16.6)	0.084
Symptom Severity (1–10) Median (IQR)	3 (5–6)	4 (5–7)	0.259
Symptom Duration Median (IQR)	5 (9–20)	4 (8–13.5)	0.475
Runny Nose n (%)	9 (7.9)	26 (11.7)	0.284
Symptom Severity (1–10) Median (IQR)	3 (5–6)	3 (4.5 –5.25)	0.848
Symptom Duration Median (IQR)	4.5 (7–10)	2.75 (5–12.75)	0.635
Sore Throat n (%)	21 (18.4)	58 (26.0)	0.141
Symptom Severity (1–10) Median (IQR)	4 (5–5.25)	4 (5–6)	0.788
Symptom Duration Median (IQR)	7 (7–10.5)	3 (5–10.5)	0.187
Dryness in Throat n (%)	15 (13.2)	36 (16.1)	0.469
Symptom Severity (1–10) Median (IQR)	4.25 (5–6.75)	4 (5–8)	0.818
Symptom Duration Median (IQR)	7 (10–21)	4 (6–11)	0.027
Loss Of Smell n (%)	24 (21.1)	71 (31.8)	0.037
Symptom Severity (1–10) Median (IQR)	5 (7–8)	5 (8–10)	0.104
Symptom Duration Median (IQR)	8 (11–20)	6 (8–13.5)	0.005
Loss Of Taste n (%)	28 (24.6)	77 (34.5)	0.062
Symptom Severity (1–10) Median (IQR)	5 (7.5–8)	5 (8–10)	0.070
Symptom Duration Median (IQR)	7.25 (12–18)	5 (8–12)	0.018
Ear Pain n (%)	4 (3.5)	6 (2.7)	0.739
Symptom Severity (1–10) Median (IQR)	2 (3–4.75)	3 (4–7.25)	0.232
Symptom Duration Median (IQR)	3.75 (6.5–8.5)	2.75 (7.5–15.25)	0.747
Dizziness n (%)	4 (3.5)	5 (2.2)	0.494
Symptom Severity (1–10) Median (IQR)	2.25 (3.5–4.75)	3.5 (4–7.5)	0.260
Symptom Duration Median (IQR)	1.75 (7–18.25)	2.75 (7.5–14.5)	0.885
Hearing Loss n (%)	0 (0.0)	2 (0.9)	0.551
Symptom Severity (1–10) Median (IQR)		5 (6.5–8)	–
Symptom Duration Median (IQR)		14 (22.5–31)	
Facial Paralysis n (%)	3 (2.6)	0 (0.0)	0.038
General Symptoms n (%)			
Cough	80 (70.2)	121 (54.3)	0.005
Fever	40 (35.1)	113 (50.7)	0.007
Fatigue	91 (79.8)	159 (71.3)	0.091
Dyspnea	73 (64.0)	84 (37.7)	<0.001

n: Number; CT: Computerized Chest Tomography; PCR: Polymerase chain reaction for SARSCoV-2 RNA; ENT: Ear Nose Throat.

lavage fluid, and stools. Some studies have observed clear differences between viral loads detected in the upper and lower respiratory tract and stool specimens.[26-28] The viral load can also differ among nasopharyngeal swabs, oropharyngeal swabs, and patient-collected throat washings.[29]

While studies have assessed gastrointestinal symptoms according to the RT-PCR sampling location and test results,[29-31] this has not been done for upper and lower respiratory symptoms. Xiao et al. reported that 23 patients with diarrhea tested positive for SARS-CoV-2 in stool specimens, but only 17 of them tested positive both in stool and respiratory samples.[31] In several studies, viral RNA was more commonly detected in the feces of patients with gastrointestinal symptoms.[29,30] While the relationship between viral

Table 4. Comparison of general symptoms, ear nose throat symptoms, PCR results and clinical course

Clinical Course	Moderate		Severe		
	n	%	n	%	p
PCR(–) CT (+)	104	91.2	10	8.8	<0.001
PCR (+)	178	79.8	45	20.2	
ENT Symptom					
(–)	112	83.0	23	17.0	0.771
(+)	170	84.2	32	15.8	
Frontal Headache					
(–)	248	83.8	48	16.2	0.889
(+)	34	82.9	7	17.1	
Nasal Congestion					
(–)	241	83.4	48	16.6	0.725
(+)	41	85.4	7	14.6	
Runny Nose					
(–)	253	83.8	49	16.2	0.889
(+)	29	82.9	6	17.1	
Sore Throat					
(–)	217	83.8	42	16.2	0.925
(+)	65	83.3	13	16.7	
Dryness in Throat					
(–)	240	83.9	46	16.1	0.781
(+)	42	82.4	9	17.6	
Loss of Smell					
(–)	195	80.6	47	19.4	0.014
(+)	87	91.6	8	8.4	
Loss of Taste					
(–)	193	83.2	39	16.8	0.718
(+)	89	84.8	16	15.2	
Ear Pain					
(–)	274	83.8	53	16.2	0.670
(+)	8	80.0	2	20.0	
Dizziness					
(–)	278	84.8	50	15.2	0.007
(+)	4	44.4	5	55.6	
Hearing Loss					
(–)	282	84.2	53	15.8	0.026
(+)	0	0.0	2	100.0	
Facial Paralysis					
(–)	280	83.8	54	16.2	0.415
(+)	2	66.7	1	33.3	
General Symptoms					
Cough					
(–)	119	87.5	17	12.5	0.119
(+)	163	81.1	38	18.9	
Fever					
(–)	162	88.0	22	12.0	0.017
(+)	120	78.4	33	21.6	
Fatigue					
(–)	79	90.8	8	9.2	0.037
(+)	203	81.2	47	18.8	
Dyspnea					
(–)	167	92.8	13	7.2	<0.001
(+)	115	73.2	42	26.8	

n: Number; CT: Computerized Chest Tomography; PCR: Polymerase chain reaction for SARSCoV-2 RNA; ENT: Ear Nose Throat.

load and disease severity has been investigated, no study has examined this relationship according to sampling location and detailed symptomatology.[32,33] In meta-analyses, Böger et al. and Abbas et al. reported that sputum was more sensitive for detecting the virus than nasopharyngeal aspirate/swabs and throat swabs.[34,35] Based on these reports and our findings, COVID-19 symptomatology may be related to the viral load at the sampling location, which might also affect the rate of RT-PCR test negativity. Therefore, clinicians should consider the sampling location.

We found that symptom duration and severity were similar between the two groups, except loss of smell, dry throat, and loss of taste. In the PCR(–)/CT(+) group, the mean durations of dry throat, loss of smell, and loss of taste were significantly longer, although their rates were lower. Determining the symptoms that best support a diagnosis of COVID-19 may assist treatment decision-making and follow-up of patients whose diagnoses are uncertain. In addition, public education about COVID-19 symptoms is necessary; patients experiencing such symptoms should be advised to self-isolate pending confirmatory testing.[36] Studies have compared symptoms among patients clinically diagnosed with COVID-19 using laboratory tests, including general symptoms.[37,38] We conducted a detailed assessment by asking about many ENT symptoms that might not be noticed unless the patients are specifically prompted. Some studies have suggested that patients with a clinical diagnosis of COVID-19 should be included to fully understand COVID-19 symptomatology.[37,38] Our study also included patients with mild-moderate and severe-critical clinical courses and revealed a multifaceted symptomatology in a very large patient group with a confirmed diagnosis or high suspicion of COVID-19.

The symptoms most commonly associated with COVID-19 are dyspnea, cough, fever, and fatigue, while otolaryngological symptoms include loss of taste and smell, sore throat, nasal congestion, runny nose, sputum production, sneezing, and dizziness.[6-9,29-31,39,40] In our study, the most common symptoms in both groups were fatigue, cough, fever, and dyspnea, similar to the literature. In both the PCR(+) and PCR(–)/CT(+) groups, the three most common ENT symptoms were loss of taste, smell, and sore throat (Table 2). A recent meta-analysis reported that olfactory dysfunction was the most prevalent ENT symptom, being observed in 47% of patients with COVID-19; we found that loss of smell was experienced by 31.8% of the PCR(+) group and 21.1% of the PCR(–)/CT(+) group. The meta-analysis found that sneezing and sputum production were the next most common ENT symptoms;[9] we did not ask about these. The few studies that have evaluated the clinical utility of olfactory and gustatory symptoms for diagnosing COVID-19

have suggested that they have low sensitivity (23–43%) and high specificity (93–99%).[41-43] In a review of anosmia and dysgeusia in COVID-19 patients, Zahra et al. suggested that the presence of olfactory and taste dysfunction can be used as a screening tool for the disease, especially in young female patients.[44] We suggest that, in suspected COVID-19 cases without laboratory confirmation showing new-onset olfactory or taste dysfunction, the patients should self-isolate and treatment for COVID-19 should be considered. Anwar et al. reported that sore throat and headache were the most common otolaryngological symptoms of COVID-19,[35] while Krajewska et al. reported that the most common symptoms were cough, sore throat, and dyspnea.[39] We asked about frontal headache and found that it was the fourth most common ENT symptom (14.0%) in the PCR(–)/CT(+) group and seventh most common ENT symptom (10.8%) overall. Two patients in our PCR(+) group experienced hearing loss and three PCR(–)/CT(+) patients had facial paralysis, which might be related with neurotrophic features of SARS-CoV-2.[42] The rate of severe disease was found significantly higher in PCR(+) patients. We found that fatigue, fever, and dyspnea were more common in patients with severe-critical disease. Dyspnea is the most common symptom reported in cases of severe disease.[40] In our study, loss of smell was more common in patients with mild-moderate disease. Some reports found that olfactory dysfunction was related to mild-moderate disease.[40,45,46] We also found that hearing loss and dizziness were related to severe disease, although very few patients had these symptoms.

Conclusion

Loss of smell and taste were most common ENT symptoms in both laboratory and clinically diagnosed COVID-19 cases. The presence of COVID-19 should definitely be considered in patients presenting with sudden loss of smell or taste. The rates of ENT symptoms especially loss of smell were found more common in laboratory diagnosed COVID-19 cases rather than clinically diagnosed COVID-19 cases. There can be a correlation between positive sample region and symptom region. Location of symptoms must be considered for decision of sampling location.

The English in this document has been checked by at least two professional editors, both native speakers of English. For a certificate, please see:

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Disclosures

Ethics Committee Approval: The study was apporeved by the SBÜ Sisli Hamidiye Etfal SUAM Local Ethics Committee (Date: 01/12/2020; Approval No. 3014).

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