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COVİD-19 HASTALARINDA KULAK BURUN BOĞAZ SEMPTOMLARI VE HASTALIK ŞİDDETİNİN DEĞERLENDİRİLMESİ

EVALUATION OF OTOLARYNGOLOGICAL SYMPTOMS AND DISEASE SEVERITY IN COVID-19 PATIENTS

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ÖZ

Giriş: *Bu çalışmanın amacı Covid -19 hastalarında kulak burun boğaz (KBB) semptomlarını ve hastalık şiddetini etkileyen faktörleri değerlendirmektir.*

Gereç ve Yöntem: *Hastanemizde Mart 2020 - Nisan 2020 tarihleri arasında PCR testi ile Covid-19 tanısı konulan 102 hasta dahil edilerek retrospektif olarak yapıldı. Hastaların semptomları, demografik özellikleri, hastalığın klinik seyri ve ek hastalıkları not edildi.*

Bulgular: *Çalışmaya yaş ortalaması 55.9 ± 18.4 (19-96) yıl olan 102 hasta dahil edildi. En sık semptomların öksürük (%53.9), ateş (%37.3) ve nefes darlığı (%32.4) olduğu gözlendi. En sık KBB semptomlarının koku alma bozukluğu (%29.4), tad alma bozukluğu (%26.5), boğaz ağrısı (%11.8) ve baş ağrısı (%6.9) olduğu tespit edildi. 65 yaş üzerinde olmanın entübe olma riskini 4.4 kat (1.6-12.1) arttırırken, ölüm riskini 5 kat arttırdığı görüldü (1.8-13.7). Kronik hastalık varlığının entübe olma riskini 6 kat arttırırken (1.6-21.9), ölüm riskini 3.1 kat (1.1-9.3) arttırdığı tespit edildi.*

Sonuç: *Çalışmamızda KBB semptomları değerlendirildiğinde rinit semptomlarının nadir görüldüğü, ancak sıklıkla koku ve tad alma bozukluğu görüldüğü ve bunlar dışında en sık karşılaşılan KBB semptomlarının kuru öksürük, boğaz ağrısı ile baş ağrısı olduğu izlendi. İleri yaş ve kronik hastalık varlığının hastalık şiddetine ilişkin en önemli risk faktörleri olduğu tespit edildi.*

SUMMARY

Objective: *The aim of this study is to evaluate otolaryngological symptoms and demographic features which effect disease severity in Covid-19 patients.*

Methods: *This is a retrospective study of 102 patients with positive covid-19 PCR test who were treated in our hospital from March to April 2020. Patients' symptoms, demographics, clinical course and comorbidities were collected and analyzed.*

Results: *The study included 102 patients. The mean age of patients was 55.9 ± 18.4 years (19–96). The most common symptoms were cough (53.9%), fever (37.3%) and shortness of breath (32.4%). The most common otolaryngeal symptom was anosmia (29.4%), followed by ageusia (26.5%), sore throat (11.8%), and headache (6.9%). Being 65 years and older increased the risk of being intubated by 4.4 times (1.6–12.1) and the risk of mortality by 5.0 times (1.8–13.7). Having a chronic disease increased the risk of being intubated by 6.0 times (1.6–21.9) and the risk of mortality by 3.1 times (1.1–9.3)*

Conclusion: *Smell and taste disturbances (anosmia and ageusia) were frequently observed, and the most common otolaryngology symptoms other than these were dry cough, sore throat, and headache. Age and the presence of chronic diseases were the most important factors determining the severity of the disease.*

INTRODUCION

The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) emerged in Wuhan, China, in December 2019 and has affected the whole world (1). The infection caused by the virus, which is rapidly crossing borders in an unprecedented manner, has been identified as a pandemic by the World Health Organization (WHO). At the time of writing this article (12 November 2020), there were 51.848.261 cases and 1.280.868 deaths worldwide approved by WHO. The Coronovirus Disease 2019 (COVID-19) is a member of the SARS-related coronavirus family that includes SARS-CoV, which previously caused an epidemic in China in 2002-2003, and Middle Eastern Respiratory Syndrome (MERS- CoV), which caused an epidemic in Saudi Arabia in 2012–2013 (2).

Often, patients with COVID-19 infection have complaints such as fever, dry cough, shortness of breath, and fatigue. However, COVID-19 can cause viral pneumonia, acute respiratory distress syndrome (ARDS), and death in certain patients (1). Nevertheless, several unusual otolaryngologic symptoms can be observed in a group of patients, particularly in the early stages of the disease, including anosmia and ageusia (3, 4).

Because Otolaryngology is one of the medical branches that physicians are at the highest risk of COVID-19 transmission, it is important to recognize the symptoms at an early stage and to suspect the disease. This study aims to evaluate the otolaryngological symptoms observed in patients followed by a diagnosis for COVID-19.

MATERIAL AND METHODS

Records of patients diagnosed with COVID-19 by the positive reverse transcription-polymerase chain reaction (RT-PCR) and followed-up and treated in our hospital between March 2020 and April 2020 were retrieved from the hospital system. Patients' complaints at the time of admission, comorbidities, demographic information, and clinical course were accessed through the hospital management system. All patients who were discharged were contacted by phone and any missing information was obtained. The relatives of the intubated and dead patients were contacted by phone, the information in the system was confirmed, and any missing information was completed. Approval for this study was obtained from the ethics committee of our hospital and the Ministry of Health. This study was approved by the local ethics committee of our hospital with the 21/05/2020 dated and 209 numbered decision.

Patients in intensive care or dead patients were excluded from the study in case of missing or insufficient data. Because certain patients were being treated for COVID-19 based on CT findings, such patients with negative PCR tests were not included in the study.

Statistical Analysis

Statistical analysis was conducted using IBM SPSS Statistics 23.0 (Statistical Package for Social Sciences, SPSS Inc. Chicago, IL, United States) software. Descriptive values were presented as number (n), percentage (%), mean, standard deviation (SD), median, and minimum-maximum. Pearson chi-square and Fisher's exact tests were used for comparing categorical

variables. The effects of different predictors determined by paired comparisons in predicting mortality were evaluated by multivariate logistic regression analysis. Hosmer–Lemeshow test was used to evaluate model fit. $p < 0.05$ was accepted as statistically significant in all analyses.

RESULTS

A total of 102 patients (51 male and 51 female) with positive PCR results and complete information were included in the study. The mean age of the patients was 55.9 ± 18.4 (range = 19–96). While 7 (6.9%) of the patients were healthcare workers, 95 (93.1%) were not healthcare workers. Note that 27.5% of the patients knew the person who infected them, whereas 72.5% did not. Of those patients who were included in the study, 17.6% had other COVID-19 positive patients in their household. While 76 patients were followed in the ward, 18 patients received intensive care, 8 patients received ward + intensive care. While 20 patients were intubated, 82 patients were followed up without being intubated. Moreover, while 21 patients (20.6%) who were followed in the hospital died, complete recovery was achieved in the remaining 81 patients (79.4%).

When chronic diseases were evaluated, it was observed that 24 patients had diabetes mellitus (23.5%), 23 patients had hypertension (22.5%), and 15 patients (14.7%) had cardiovascular diseases. Moreover, 12.7% of cases had psychiatric/neurological disorders, 5.9% had hypo/hyperthyroidism, 4.9% had cancer, 4.9% had BPH, and 2% had asthma (Table 1).

When patient symptoms at admission were evaluated, the most common symptom was cough (53.9%), followed by fever (37.3%), shortness of breath (32.4%), anosmia (29.4%), ageusia (26.5%), sore throat (11.8%), and headache (6.9%). Rhinitis-related symptoms such as runny nose or nasal congestion were observed in 1% of the patients, whereas the rate of asymptomatic patients was 10% .

There was no statistically significant difference between patients over 65 years of age and patients under 65 years of age in terms of the asymptomatic course of the disease (Table 2). However, it was observed that patients under 65 years of age mostly passed the disease at home/in the ward, while patients over 65 years of age had a higher rate of intensive care stay and the difference was significant ($p = 0.003$). The frequency of intubation and mortality was significantly higher in patients aged 65 and above compared to the 18–64 age group ($p < 0.05$). Being 65 years and older increased the risk of being intubated by 4.4 times (1.6–12.1) and the risk of mortality by 5.0 times (1.8–13.7).

Table 1. Chronic disease status in cases

	n	%*
No	45	44.1
Diabetes mellitus	24	23.5
Hypertension	23	22.5
Cardiovascular Diseases	15	14.7
Psychiatric / neurological disorders	13	12.7
Hypothyroidism / hyperthyroidism	6	5.9
Cancer	5	4,9
Benign prostatic hypertrophy (BPH)	5	4.9
Asthma	2	2.0
Other	7	6,9
Total	102	100.0

n = frequency , % = column percentage, * More than one disease could be selected

Table 2. Comparison of symptom presence, place of treatment, intubation and mortality status between age groups

	Age Groups				p	OR	%95 CI
	18-64		65 and above				
	n	%	n	%			
Symptoms							
No	7	10.1	3	9.1	0.587**	-	-
Yes	62	89.9	30	90.9			
Place of Treatment							
Ward	58	84.1	18	54.5	0.003*	-	-
Intensive Care	9	13.0	9	27.3			
Intensive Care + Ward	2	2.9	6	18.2			
Intubation							
Yes	8	11.6	12	36.4	0.003*	4.4	1.6-12.1
No	61	88.4	21	63.6			
Mortality							
Yes	8	11.6	13	39.4	0.001*	5.0	1.8-13.7
No	61	88.4	20	60.6			
Total	69	100.0%	33	100.0%			

p = significance level, OR = odds ratio, CI = confidence interval

There was no difference between genders in terms of symptom presence, place of treatment, intubation, and mortality status. When the patients with and without chronic disease were evaluated, there was no difference in the presence of symptoms between the two groups (p = 0.528). However, there was a statistically significant difference between the two groups in terms of place of treatment (p = 0.034), intubation (p = 0.003) and mortality (p = 0.035). The frequency of intensive care admission, intubation, and mortality was higher in patients with chronic disease. Having a chronic disease increased the risk of being intubated by 6.0 times (1.6–21.9) and the risk of mortality by 3.1 times (1.1–9.3) (Table 3). When diabetes mellitus, hypertension, and cardiovascular disease positive patients were compared among themselves, there was no difference in terms of symptom presence, place of treatment, intubation, and mortality.

Table 3. Comparison of symptom presence, place of treatment, intubation, and mortality status according to presence of chronic disease

	Chronic Disease				p	OR	%95 CI
	Yes		No				
	N	%	N	%			
Symptoms							
No	6	10.5	4	8.9	0.528**	-	-
Yes	51	89.5	41	91.1			
Place of Treatment							
Ward	37	64.9	39	86,7	0.034*	-	-
Intensive Care	13	22.8	5	11.1			
Intensive Care + Ward	7	12.3	1	2.2			
Intubation							
Yes	17	29.8	3	6.7	0.003*	6.0	1.6-21.9
No	40	70.2	42	93.3			
Mortality							
Yes	16	28.1	5	11.1	0.035*	3.1	1.1-9.3
No	41	71.9	40	88.9			

n = frequency, % = column percentage, OR = odds ratio, CI = confidence interval, *Pearson chi-square test, **Fisher's exact test

Table 4. Logistic regression analysis performed to predict intubation and mortality

		OR	%95 CI		p
			Lower Limit	Upper Limit	
INTUBATION	Age	1.03	1.00	1.07	0.057
	Gender Male (reference: female)	1.33	0.46	3.84	0.596
	Chronic Disease Yes (reference: no)	4 .29	1.09	16.90	0.038
MORTALITY	Age	1.05	1.02	1.09	0.005
	Gender Male (reference: female)	2.62	0.88	7.83	0.085
	Chronic Disease Yes (reference: no)	2.06	0.60	6.99	0.249

OR = odds ratio, CI = confidence interval, p = significance level

The presence of chronic illness significantly affected the intubation status, whereas age significantly affected mortality. Table 4 shows the result of the logistic regression analysis performed to predict intubation and mortality. While having a chronic disease increased the risk of being intubated by 4.29 times (1.09–16.90) compared to not having any chronic disease (p = 0.038), a 1 unit increase in age increased the risk of mortality by 1.05 times. (1.02–1.09) (p = 0.005)

DISCUSSION

Covid-19 pandemic, which emerged from Wuhan, China, and rapidly spread all over the world, caused many changes from our lives to our daily practices. Considering the transmission route, otolaryngologists are among the top risk groups, and they are involved in the diagnosis and treatment of the disease. Furthermore, because otolaryngology is the department most commonly encountering the respiratory tract because of physical and endoscopic examinations, and because viral rhinitis and pharyngitis cases are frequently referred to an otolaryngologist, particularly in Turkey, the recognition of Covid-19 symptoms are important.

The mean age of our patients was 55.9 ± 18.4 years, the youngest patient was 19, and the oldest patient was 96. The reason for the high average age of our patients may be related to the referral of pediatric cases to other hospitals because of the lack of an inpatient pediatric service in our hospital. In our study, no difference was observed between genders in terms of the number of patients, symptoms, intubation, and mortality rates. However, Jin et al. suggested that the course of the disease was more severe in men (5).

When the distribution of symptoms was examined, the three most common symptoms in this study were cough (53,9%), fever (37,3%), and shortness of breath (32,4%), in accordance with the literature (6, 7). Note that 10% of our patients were completely asymptomatic. The rates in the literature on olfactory disorders vary between 19.38% and 85.61% (4, 8-10). When odor tests are performed, these rates increase. The rates of ageusia vary between 23.33% and 88.8% (4, 10, 11). In this study, the rate of anosmia was 29.4% and the rate of ageusia was 26.5%. The reason for the lower rate of anosmia in this study compared to the literature seems to be the absence of odor tests.

In this study, symptoms that may be associated with rhinitis were observed at 1%; however, a sore throat was observed in 11.8% of patients. This demonstrates that additional attention should be focused on the differential diagnosis, particularly in patients with sore throat complaints, because this may indicate Covid-19. In our patients, headache was observed at a rate of 6.9%, whereas the rate of myalgia and diarrhea was 4.9% and 3.9%, respectively.

Both hearing loss and other ear symptoms were not observed in Covid-19 infection (7). In this study, there were no patients with hearing loss

and ear involvement; however, one patient described dizziness, although it was considered that this was not peripheral vertigo originating from the ear, but dizziness associated with infection. Nasal obstruction was observed in one patient (1%), whereas another patient (1%) described nasal discharge. However, rhinitis symptoms were generally extremely rare, except for the anosmia.

While 20 patients we followed up in our hospital were intubated, 82 patients were followed-up without being intubated. Although 21 patients (20.6%) followed-up in the hospital died, complete recovery was achieved for the remaining 81 patients (79.4%). In the literature, the mortality rate ranged from 1.6% to 6% (1, 12) The high mortality rate in our patients may be attributed to the fact that our hospital is a tertiary center and the high number of referrals from surrounding hospitals for intensive care requirements. Furthermore, asymptomatic COVID-19 patients are usually followed-up at home by primary healthcare institutions. In their study with 107 patients in a single-center regional hospital, Turcotte et al. (13) reported the mortality rate as 24.8% and the requirement for mechanical ventilation as 29.1%.

In this study, there was no difference in symptoms between the 18-64 age group and patients over 65 years of age; however, a significant difference was reported between the place of treatment, intubation, and mortality. Both intubation and mortality rates in this study were higher in patients with chronic diseases. However, no significant difference was observed between diseases.

During the regression analysis, the presence of chronic disease was the most effective factor in predicting intubation, while the effect of age was more limited. Nevertheless, the most effective factor in predicting mortality was age and other factors were not effective. When these results are evaluated together, the most important factors determining the severity of the disease are age and the presence of chronic diseases.

The limitations of this study are as follows: A small number of patients were followed up in a single center. The study did not include a pediatric patient group because our hospital did not have a pediatric service. The study was retrospectively designed and did not include the treatment process.

CONCLUSION

When otolaryngological symptoms were evaluated, rhinitis symptoms were rarely observed; however, smell and taste disturbances (anosmia and ageusia) were frequently observed, and the most common otolaryngological symptoms other than these were dry cough, sore throat, and headache.

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