



Evaluation of Patient Characteristics and Pandemic Management in the First Three Months of the COVID-19 Pandemic at the

Eğitim ve Araştırma Hastanesinde COVID-19 Pandemisinin ilk Üç Ayında Hasta Özelliklerinin Değerlendirilmesi ve Pandemi Yönetimi

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ABSTRACT

Aim: To evaluate the hospitalization process of suspect COVID-19 patients in Samsun Training and Research Hospital, to evaluate the clinical characteristics of the patients, the treatment process, and the success of the treatment.

Material and Methods: The data from 284 suspected COVID-19 patients who were admitted to COVID-19 clinic at Samsun Training and Research Hospital between 18 March 2020 and 29 May 2020 were analyzed.

Results: 284 suspect COVID-19 patients were evaluated. The age range of the patients was 18-95 and the mean age was 53. Average hospitalization days were 7.14. A definite diagnosis of COVID-19 was made in 33 patients (11.6%) due to reverse transcription polymerase chain reaction (RT-PCR) positivity. Although the RT-PCR test of 35 patients was negative, these patients were evaluated as COVID-19 with high clinical probability because of the ground glass opacities in harmony with COVID-19 in CT (Computed Tomography). There were no radiological findings in 10 of our RT-PCR positive patients. The patients mostly presented with complaints of cough and fever. 68 (23.9%) of 284 patients we followed were evaluated as COVID-19.

Conclusion: The number of unnecessary hospitalizations was high due to the fact that clinical complaints were the main criteria for admission to the hospital. Yet, no CT finding was observed in about 1/3 of the RT-PCR positive patients. Clinical and radiological improvement was achieved in most of the patients using the treatments in hand.

Keywords: COVID-19, Pandemic management, Diagnosis, Treatment

ÖZ

Amaç: Samsun Eğitim ve Araştırma Hastanesinde COVID-19 şüpheli hastaların hastaneye yatış sürecinin değerlendirilmesi ve hastaların klinik özellikleri ile tedavi sürecinin ve başarısının değerlendirilmesi amaçlanmıştır.

Gereç ve Yöntemler: 18 Mart 2020 ve 29 Mayıs 2020 tarihleri arasında Samsun Eğitim ve Araştırma Hastanesi COVID-19 servisine COVID-19 hastalığı şüphesi ile yatırılan 284 hastanın verileri değerlendirildi.

Bulgular: COVID-19 şüphesi ile yatan 284 hasta değerlendirildi. Hastaların yaş aralığı 18-95 arasında olup ortalama yaş 53 idi. Ortalama yatış günü 7.14 bulundu. 33 hasta (%11.6) COVID-19 reverse transcription polymerase chain reaction (RT-PCR) pozitif saptandı. 35 hastanın COVID-19 RT-PCR testi



negatif olup bilgisayarlı tomografide (BT) buzlu cam görünümü nedeniyle yüksek klinik olasılıklı COVID-19 enfeksiyonu olarak değerlendirildi. RT-PCR pozitif hastaların 10'unda radyolojik bulgu yoktu. Hastalar en fazla öksürük ve ateş yakınması ile başvurmuşlardı. Takip ettiğimiz 284 hastanın 68'i (%23.9) COVID-19 olarak kabul edildi.

Sonuç: Hastaların hastaneye kabulünde daha çok klinik yakınmaları dikkate alınması ile gereksiz hasta yatışı sayısı fazla olmakla beraber COVID-19 RT-PCR pozitif hastalarda yaklaşık 1/3 oranında tomografi bulgusu izlenmemiştir. Mevcut tedaviler ile büyük oranda hastada klinik ve radyolojik düzelme görüldü.

Anahtar Sözcükler: COVID-19, Pandemi yönetimi, Tanı, Tedavi

INTRODUCTION

Cases of pneumonia of unknown etiology were reported on December 31, 2019 in Wuhan, Hubei Province, China (1). It was identified on January 7, 2020, that the disease agent is a new coronavirus (2019-nCoV) that has not been detected in humans before. The name of the disease was later evaluated as coronavirus disease-19 (COVID-19), and its agent was accepted as SARS-CoV-2 due to its close similarity to SARS CoV (2). Although 81% of the cases show a mild course, severe pneumonia develops in 14%, respiratory failure, ARDS and multi-organ failure in 5% cases. The most common symptoms are cough, high fever, and shortness of breath. Although the incubation period may extend up to 14 days, it is usually 4-5 days (3).

Isolation is still seen as the most effective way to prevent contamination in Covid-19. Isolation, also referred to as segregation, is the cessation of contact of the cases with healthy people as long as the contagious period and keeping them separate. Most of the cases are mild and asymptomatic, and these cases can be followed and isolated at home. However, in this case, it should be tried to ensure that the house conditions are in accordance with the isolation principals. Therefore, in our country, we prefer to follow up and isolate mild cases in hospitals or designated places.

Suspected/Confirmed Covid-19 cases with severe clinical status, and with an age over 50 years and with concomitant diseases that may cause severe Covid-19, and with any of the poor prognostic factors are followed in the hospital. Patients who are hospitalized and meet the discharge criteria can also complete their recovery period at home.

In this study, we wanted to evaluate the reasons for unnecessary hospitalization in pandemic clinics and the accuracy of hospitalization indications by examining patients hospitalized with suspected coronavirus infection in pandemic hospitals established to fight COVID-19.

MATERIAL and METHODS

Study Population and Data Collection

284 patients who were admitted to COVID-19 clinic at the Samsun Training and Research Hospital between 18 March 2020 and 29 May 2020 with suspected COVID-19 disease

and followed up by a pulmonologist were analyzed. Those who had RT-PCR positivity in the nose/throat swab were diagnosed with definite COVID-19. Patients with ground glass opacities in harmony with COVID-19 on CT imaging were evaluated as high clinical probability COVID-19. Among those with positive antibody test results, if the CT image was in harmony with COVID-19, it was evaluated as COVID-19 with high clinical probability.

The study was approved by the Ethics Committee of University of Health Sciences, Samsun Training and Research Hospital on 18.06.2020 (approval number 2020/9/11). Patient files and hospital information system records were examined prospectively, and a database was created. Patients were analyzed using this database.

Informed Consent

Due to the retrospective design of the study, informed consent was not taken.

Statistical Analysis

Statistical analyzes were performed using the SPSS (Statistical Package for the Social Sciences) 26.00 software. The data of the patients were calculated using descriptive statistical methods (mean, standard deviation) and frequency analysis was performed. The chi-square test was used compare categorical variables between groups, and a p value of <0.05 was considered significant.

RESULTS

One hundred and fifty-six of the patients (54.9%) were male and 128 (45.1%) were female. The age range of the patients was 18-95 and the mean age was 53.4 ± 20.3 . 33 patients (11.6 %) were evaluated as COVID-19 with high clinical probability because of the RT-PCR positivity, and 35 patients because of the ground-glass appearance harmonious with COVID-19 (antibody positivity was also shown in 8 patients). A total of 68 patients (23.9%) were evaluated as COVID-19 (Table 1).

When 284 patients were evaluated, the mean hospitalization day in our clinic was found to be 7.1 ± 4.2 (min; 1 - max: 25 days). This rate was 10.2 in 68 patients evaluated as COVID-19 infection (min: 2 - max: 25 days). When the complaints of the patients presenting to the hospital were

Table 1: Acceptance criteria of our patients admitted to COVID-19 clinic.

	n	%
RT-PCR positivity	33	48.5
CT appearance compatible with COVID-19 (RT-PCR and antibody test negative)	27	39.7
Antibody positive and CT appearance compatible with COVID -19	8	11.8
Total	68	100

RT-PCR: real-time reverse transcription polymerase chain reaction **CT:** computed tomography.

examined, cough and fever were the prominent reasons for all the patients as well as the group evaluated as COVID-19 infection (Table 2).

CT was performed in 281 of the patients, 3 patients were excluded due to pregnancy. CT findings of the patients are given in Table 3. When the comorbidities of the patients were examined, 165 patients (58.1%) had additional diseases. 52.2% of the patients who had been evaluated as COVID-19 was found to have additional diseases. In the group evaluated as COVID-19 infection, 31.9% of the patients had 1 concomitant disease, while 14.5% had 2 accompanying diseases. The distributions according to the accompanying diseases are given in Table 4.

When the laboratory findings were evaluated, the c-reactive protein (CRP) value in all patients was quite high in both groups and was over 50%. Leukocytosis was also lower in COVID-19 cases (Table 5) ($p < 0.05$). All hospitalized patients were treated according to the treatment algorithm of the Ministry of Health, additionally 110 patients (38.7%) were given nonspecific antibiotic treatment. Among the pa-

Table 2: Clinical complaints of the patients.

	All patients (n=284) n (%)	Patients accepted as COVID-19 (n=68) n (%)
Cough	148 (52.1)	42 (61.7)
Fever	139 (48.1)	34 (50)
Shortness of breath	91 (32)	8 (11.7)
Weakness	43 (15.1)	14 (20.5)
Postnasal discharge	37 (13)	5 (7.3)
Muscle pain	22 (7.7)	6 (8.8)
Chest pain	13 (4.6)	4 (5.8)
Diarrhea	11 (3.9)	2 (2.9)

tients evaluated as COVID-19, favipiravir (2x1600 mg loading, 2x600 mg maintenance, 5 days) was given to 8 (11.6%) patients with a common disease and respiratory failure on CT, immune plasma therapy was given to 4 (5.8%) patients, and tocilizumab (2 doses of 400 mg 24 hours apart/day)

Table 3: CT findings of the patients.

	Number of patients (n)	Percentage (%)
Findings other than viral infections	120	42,3
Normal	70	24,6
Typical findings consistent with COVID-19	54	19
Atypical findings in terms of COVID-19	37	13
Patients with no CT scan	3	1,1
Total	284	100

CT: Computed tomography

Table 4: Distribution of additional diseases of the patients.

	All patients (n=284) n (%)	Patients accepted as COVID-19 (n=68) n (%)
Hypertension	58 (20.4)	13 (19.1)
Chronic Respiratory Disease	57 (20.1)	9 (13.2)
Coronary Artery Disease/Heart Failure	49 (17.3)	11 (16.1)
Diabetes Mellitus	35 (12.3)	10 (14.7)
Malignancy	11 (3.9)	4 (5.8)
Renal failure	7 (2.5)	1 (1.4)

Table 5: Evaluation of the laboratory tests of the patients.

	All patients (n=284) n (%)	Patients accepted as COVID-19 (n=68) n (%)
High CRP value	169 (59.5)	40 (58.8)
Leukocytosis	78 (27.5)	4 (5.8)
High creatine value	32 (11.3)	6 (8.8)
High creatine kinase value	27 (9.5)	7 (10.3)
High liver enzyme value	19 (6.7)	9 (13.2)
Leukopenia	7 (2.5)	3 (4.4)

CRP: C-reactive protein

was given to 2 (2.9%) patients. 27 (9.5%) of all our patients needed intensive care. While some of these patients were initially followed up in the intensive care unit and were later transferred to the service, some of them were patients who were sent to intensive care during their hospitalization. Intensive care needs mostly occurred due to the comorbidities. Eight of our patients (2.8%) died. 97.2% of patients were discharged with full recovery. In a total of 68 patients who were diagnosed with RT-PCR positivity and evaluated as COVID-19 with high clinical probability, the number of exitus was 1 (1.4%).

DISCUSSION

With the pandemic process in our country, pandemic hospitals were determined in every city and special isolated services were created in other hospitals for possible COVID-19 cases. Generally, most patients with respiratory symptoms were hospitalized although in the early stages of the process, patients with any respiratory complaints or fever (cough, runny nose, respiratory distress, etc.) were usually scheduled for hospitalization based on the findings of viral infection, if they had no contraindications, especially after the CT was performed and reported. After the patients were hospitalized, their nasopharyngeal and oropharyngeal swabs were taken and the patients were given chloroquine-based treatment, azithromycin and oseltamivir treatment at the beginning of the process.

Definitive diagnosis in possible cases with COVID-19 is based on the detection of specific sequences of viral RNA by real-time reverse transcription polymerase chain reaction (RT-PCR). Samples are taken as a nasopharyngeal and / or oropharyngeal swab. Apart from this, tracheal aspirate and / or bronchoscopic samples can also be taken in complicated cases. In our country, samples were initially evaluated only in the General Directorate of Public Health (HSGM) Microbiology Reference Laboratories (4). The scope of reference laboratories was expanded later, as this restriction caused late diagnosis and treatment delay (5). In order to make a

definitive diagnosis and to prove the disease scientifically, the RT-PCR test must be positive or the late period, antibody positivity in the blood must be shown. However, overall RT-PCR positivity ranges from 30 to 60%. In a study conducted in China, the general sensitivity of the RT-PCR test was found to be 67.1%. The sensitivity was 66.7% from 1 to 7 days; 54% from 8 to 14 days; 45.5% from 15 to 39 days. (4). When evaluated among all patients, the RT-PCR positivity rate of the patients hospitalized in our clinic was 11.6%. (33 of 284 patients were found positive). 19 of 54 patients whose radiological findings were compatible with COVID-19 infection showed RT-PCR positivity (35.2%). RT-PCR positivity in our study was similar to other studies (6).

WHO uses suspect case, probable case and confirmed case in case definitions. Cases with clinical and contact history are evaluated in the definition of suspect case. Suspect cases are accepted as probable cases when the test cannot be performed for any reason or when the test is performed but the result is inconclusive. All cases with a laboratory diagnosis (molecular or serological) are included in the confirmed case definition (7, 8). In our study, the antibody test was positive in 33 cases (11.6%) with PER positivity and in 11 of 22 patients who were tested for antibodies. CT appearance in 8 of these patients was compatible with COVID-19. Since the RT-PCR test result was delayed and the sensitivity was low, non-contrast computed thorax tomography was performed for diagnostic purposes in all patients, except 3 patients who were admitted to our clinic.

In a study conducted in China, it was shown that CT was 88% diagnostic and was positive in 97% of RT-PCR positive patients (9). This rate was found to be lower in our study. In 19 (57.6%) of our 33 RT-PCR positive cases, CT was compatible with viral infection, while in 10 cases (30.3%) CT was considered completely natural; in 2 cases (6.1%) it was evaluated as atypical in terms of viral infection, however, there were findings other than viral infection in 2 cases (6.1%). As for these rates, the reason for the absence of any radiological findings, especially in 1/3 of the cases with RT-PCR positivity, can be explained by the fact that although CT was performed in almost all of the patients while being admitted to the clinic, the absence of radiological findings or existence of findings other than viral infection did not prevent hospitalization in terms of COVID-19 infection.

One of the determining factors in deciding the hospitalization of the patients was the comorbid conditions of the patients. Additional disease was present in 58.1% of our patients. More than 20% had hypertension and chronic respiratory diseases as additional diseases, followed by coronary artery diseases/heart failure at a rate of 17.3% and DM at a rate of 12.3% (Table 4). It is also emphasized in the literature that obesity is a major risk factor with a negative clinical prognosis in patients with COVID-19 (10).

In our center, almost all respiratory tract complaints were hospitalized for examination purposes during the pandemic period whereas in most centers, patients were admitted to pandemic services according to their CT appearance. The ratio of 97% indicates that the patients were hospitalized according to the CT findings. According to the first guide suggested by our Ministry of Health; hydroxychloroquine, oseltamivir and azithromycin treatment was initiated in all patients hospitalized in our clinic. After the guide was updated, oseltamivir treatment was removed. WHO, on the other hand, recommends only symptomatic treatment such as antipyretic and does not recommend hydroxychloroquine (11). For our patients, favipiravir treatment was used in 8 patients with extensive radiological involvement, plasma in 4 patients and tocilizumab treatment in 2 patients. Especially in patients using favipiravir, it was observed that clinical complaints improved more quickly. The reason for the low number of patients using Favipiravir was the fact that patients with respiratory failure or extensive radiological involvement were primarily followed up in the intensive care unit, and patients with more clinically stable conditions were admitted to the service.

We think that there are too many unnecessary hospitalizations to pandemic services created in the pandemic process, and unnecessary pandemic service admissions can be prevented by performing an outpatient RT-PCR examination, especially in patients whose CT findings are not compatible with COVID-19.

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Author Contributions

Both authors have equal contributions.

Conflicts of Interest

We have no conflict of interest to declare

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Ethical Approval

The study was approved by the Ethics Committee of University of Health Sciences, Samsun Training and Research Hospital on 18.06.2020 (approval number 2020/9/11)

Review Process

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