Assessment and management of the SARS-CoV-2 infection: A secondary center experience

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Abstract

Background: The aim of the study was to evaluate the management and outcomes of the patients with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in a secondary hospital. Methods: A total of 699 hospitalized patients who had positive rRT-PCR for SARS-CoV-2 and/or typical findings of COVID-19 at chest computed tomography (CT) were enrolled in this study. Demographics, comorbities, initial laboratory tests on admission, treatment modalities, complications and outcomes were evaluated retrospectively. Results: The mean age was 57.0±15.6 (range:16-94 years), and male:female ratio was 1.24. 58.7% of the patients had at least one underlying comorbidity, the most common was hypertension. 72.8% of the patients had positive RT-PCR. 18.1% of the patients had lymphopenia, 35.7% hyperferritinemia, 58.3% increased lactate dehydrogenase, and 58.5% increased D-dimer. Chest CT revealed moderate and severe stage in 57.9% of the patients, and bilateral lung involvement in 78.7%. Hydroxychloroquine was given to 37.2% and favipiravir 67.1% of the patients. No significant difference was observed between treatment groups in terms of mortality (P=0.487). 5.8% of the patients were transferred to the ICU, of whom 75.6% were needed non-invasive and 36.5% invasive mechanical ventilation. The overall case fatality rate was 0.9. Conclusions: Older age, male sex, low lymphocyte count, CT findings including bilateral involvement and severe stage were significantly associated with poor prognosis and mortality.

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Results: The mean age was 57.0±15.6 (range:16-94 years), and male:female ratio was 1.24. 58.7% of the patients had at least one underlying comorbidity, the most common was hypertension. 72.8% of the patients had positive RT-PCR. 18.1% of the patients had lymphopenia, 35.7% hyperferritinemia, 58.3% increased lactate dehydrogenase, and 58.5% increased D-dimer. Chest CT revealed moderate and severe stage in 57.9% of the patients, and bilateral lung involvement in 78.7%. Hydroxychloroquine was given to 37.2% and favipiravir 67.1% of the patients. No significant difference was observed between treatment groups in terms of mortality (P=0.487). 5.8% of the patients were transferred to the ICU, of whom 75.6% were needed non-invasive and 36.5% invasive mechanical ventilation. The overall case fatality rate was 0.9.

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Key words: COVID-19; SARS-CoV-2; treatment; outcome; adults

Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection has been firstly reported in Wuhan, China, and later World Health Organization (WHO) designated coronavirus disease 2019 (COVID-19) in February 2020[1], declared it as a pandemic on March 11, 2020. Since the first COVID-19 case was confirmed in our country in March 9, 2020 and first death in March 17, 2020, the burden of the disease has grown rapidly.

The clinical spectrum of SARS-CoV-2 infection is wide ranging from asymptomatic infection, mild upper respiratory tract illness, and pneumonia to life threatening severe disease, even death.[2-5]

To our knowledge, no previous studies have been conducted among patients with COVID-19 in secondary hospitals of our country. Here, we present clinical assessment, management and outcomes of the patients with SARS-CoV-2 infection in a secondary hospital.

Material and methods

11,392 real-time reverse transcriptase-polymerase chain reaction (rRT-PCR) tests were taken from the patients who admitted with suspicious symptoms or signs of COVID-19 to the emergency department of a secondary hospital in Istanbul, Turkey between March 31 and May 30, 2020 and September 1 and December 31, 2020. 2448 of rRT-PCR tests were positive, 8670 were negative and the rest was improper samples. A total of 699 patients who had positive rRT-PCR for SARS-CoV-2 and/or typical findings of COVID-19 at chest computed tomography (CT) were hospitalized and involved in this retrospective observational study. Three wards, a total of 43 beds, were transformed into clinics of COVID-19 and 6 beds in intensive care unit (ICU) were reserved for these patients.

Demographics, comorbities, medications, triage vitals, symptoms and signs on admission, initial laboratory tests, PCR results, inpatient treatment (antivirals, corticosteroids (CS), antibiotics, convalescent plasma, tocilizumab), complications (heart failure, septic shock, acute respiratory distress syndrome) and outcomes (length of hospitalization, ICU requirement, discharge, readmission, and mortality) were extracted retrospectively from electronic medical records.

Oropharyngeal and nasopharyngeal swab samples were taken from all of the patients at the emergency department before hospitalization and were transferred to laboratory authorized by the Ministry of Health Public Health Office. rRT-PCR tests for SARS-CoV-2 were performed by using Biospeedy COVID-19 RT-qPCR Detection Kits (Bioksen, Istanbul, Turkey).

All of the patients had routine blood examinations as complete blood count, biochemical tests (liver and renal function tests, glucose, electrolytes), lactate dehydrogenase (LDH), C-reactive protein (CRP), ferritin, D-dimer on admission. Cardiac enzymes, procalcitonin (PCT) and fibrinogen were tested if clinically indicated. Chest CT scan was also performed in every patient on admission.

Diagnosis of COVID- 19 disease was based on the WHO guidance[6] and the New Coronavirus Pneumonia Prevention and Control Program (fifth edition) published by the National Health Commission of China.[7] Acccording to clinical features on admission, the patients were classified as mild, moderate, severe and critical cases. Mild patients refer to patients with no radiographic evidence of pneumonia and moderate patients were the patients with fever, respiratory symptoms, and radiographic evidence of pneumonia. The patients who had respiratory distress ([?] 30 breaths), [?] 93% oxygen saturation at rest, ratio of partial pressure of arterial oxygen to fractional concentration of oxygen inspired air [?] 300 mm Hg or and/or lung infiltrates $>$ 50% within 24-48 hours defined as having severe disease whereas if the patients had complications such as respiratory failure, requirement of mechanical ventilation support, septic shock, and multiple organ failure were defined as critical cases.[7]

Multiple ground-glass opacities and consalidations were considered typical for COVID-19. CT findings were classified as; 0: Normal, 1: Mild (ground-glass opacity and consolidation, lesions can be single or multiple and may de located in both lung lobes), 2: Moderate (large lesions in more than one lobe in both lungs, various sizes of consolidation and fibrosis), 3: Severe (lesions are diffuse in both lungs and in different density, white lung sign due to involvement of large areas of lung, thickening of pleura, and pleural effusion).[8]

The patients were followed-up by pulse oximetry monitoring. The patients whose oxygen saturation rate was [?] 93% were given oxygen support by nasal cannula or face masks. The standart treatment protocol recommended by National Ministry of Health Public Health Office included oral oseltamivir (Tamiflu$^{(r)}$) 2x75 mg/day due to inability to rule out seasonal influenza, oral hydroxychloroquine (Plaquenil$^{(r)}$) 2x400 mg loading dose and 2x200 mg/day maintenance dose and oral azithromycin 1x500 loading dose and 1x250 mg/day maintenance dose for 5 days during the first wave of the outbreak.[9] Routine electrocardiography was performed before the initiation of treatment to rule out QT interval prolongation. If no improvement was observed, oral favipiravir or lopinavir 200 mg/ritonavir 50 mg (Kaletra$^{(r)}$) 2x2 was initiated. Favipiravir (Favicovir$^{(r)}$) was given at a loading dose 2x1600 mg and 2x600 mg/day maintenance dose, and especially was preferred in the second wave of the outbreak. Cephalosporins or piperacillin-tazobactam and with or without respiratory fluoroquinolones were given for possible bacterial agents, if indicated. Additionally, vitamin C (1x3 gr) was used.

Later in the outbreak, low molecular weight heparin (LMWH), as Enoxaparin, was started according to body mass index (BMI$<$ 40/kg/m2 1x40 mg/day, and BMI $>$ 40/kg/m2 2x40 mg/day subcutaneously) to prevent venous thromboembolism. If creatinine clearance (CrCl)$<$ 30 ml/min, standart dose heparin (5000 U 2x1 or 3x1/day, subcutaneously) was recommended by National Ministry of Health guidelines. Methylprednisolone 40-80 mg/day intravenously was also added to the treatment protocol. Some patients who had worsening symptoms and laboratory parameters despite treatment with low-moderate dose CS were given pulse methylprednisolone 250 mg/day for three consecutive days. If no response was observed with CS and signs of macrophage activation syndrome (MAS) including persistent fever, continuously increasing CRP, ferritin ($>$ 700 µg/L), and D-dimer levels, lymphopenia, thrombocytopenia, neutrophilia and deterioration of liver function tests were detected, tocilizumab (Actemra®) 1x200-400 mg was administered. Convalescent plasma was given in patients within 7 days before pneumonia progresses.

The patients who clinically decompensated (tachypnea respiratory rate$>$30/min, dyspnea, refractory hypoxemia, hypotension) and had decreased oxygen saturation rate ($<$90%) despite treatment, oxygen support, and prone positioning were transffered to ICU.

The criteria for discharge were absence of fever at least 3 days, clinical remission of respiratory and other symptoms.[10]

The case fatality rate (CFR) was defined as number of deaths who tested positive for SARS-CoV-2 divided by the number of laboratory-confirmed SARS-CoV-2 cases admitted to hospital.[11]

The study protocol was approved by the local ethics committee (No:2/2021.K-08). This study was performed in accordance with the declaration of Helsinki. Written informed concents were taken from patients before treatment.

Statistical analysis

Statistical analysis was performed using SPSS 15.0 software (SPSS Inc, Chicago,IL,U.S.A.). Results were expressed as numbers and percentage for categorical variables and means ± SD, minimum and maximum for numerical variables. The analysis was conducted using chi-square test. As the numerical variables did not meet the normal distribution, comparisons of two independent groups were made by using Mann Whitney U test. Pvalues of $<$0.05 were considered statistically significant.

Results

The mean age of 699 patients was 57.0±15.6 (range:16-94 years), and male:female ratio was 1.24. The

median duration of hospitalization was 6.4±4.8 days, significantly higher in patients with both diabetes mellitus (DM) and hypertension (HT) than the other patients (P=0.003).

Overall, 58.7% of the patients had at least one underlying comorbidity. The most common comorbidity was HT, followed by DM, cardiovascular disease, asthma and chronic obstructive pulmonary disease (COPD). The most common symptoms on admission were cough (49.8%), fever (32.5%), and dyspnea (32%). The clinical and demographic characteristics of the patients are shown in Table 1.

72.8% of the patients had positive RT-PCR. Positivity was significantly higher in the patients hospitalized in the second wave than the patients in the first wave of the outbreak (80.7% vs 57.5%, P<0.001).

18.1% of the patients had lymphopenia, 35.7% hyperferritinemia, 58.3% increased LDH, 1.9% thrombocytopenia, 58.5% increased D-dimer, 45.5% increased PCT and 22.9% hyponatremia. The laboratory findings of the patients are shown in Table 2.

When compared, no statistically significant differences were obtained in terms of complete blood count, biochemical parameters, and CT findings among patients according to age, sex, and underlying comorbidity except increased PCT levels in patients with DM and both DM and HT. There was no difference in laboratory findings between the patients hospitalized in the first and second waves.

Chest CT classification and distribution of lesions were significantly different in patients hospitalized in the first wave of the outbreak than the patients in the second wave (P<0.001). Moderate and severe stage, and bilateral lung involvement were higher in patients hospitalized in the second wave (P<0.001).

26.6% of the patients whose RT-PCR tests were negative, but had CT findings suggesting COVID-19 disease were accepted to be infected and given treatment. The combination of hydroxychloroquine, azithromycin and oseltamivir treatment was given 20.2% of the patients, whereas 31.2% of the patients received hydroxychloroquine plus azithromycin treatment in the first wave (Table 3). All of the patients (n= 426) were given favipiravir monotherapy in the second wave. Antibiotics other than azithromycin were used in 41.9% of the patients, in 43.3% of the patients treated with hydroxychloroquine and 46.7% of the patients treated with favipiravir. No significant difference was observed between treatment groups, hydroxychloroquine and favipiravir in terms of mortality (2.3% vs 3.3%, P=0.487).

1.49% of the patients who received favipiravir developed bradycardia responsive to atropine. Only 3 patients had rash due to drug side effect or disease itself.

51.9% of the patients were treated with CS. Only two patients received pulse steroids. No significant difference was observed in mortality between patients who received CS, predominantly in the second wave, and those who did not (P=0.487).

Tocilizumab was given to 5.7% (n=40) of the patients, all in the second wave. 60% of these patients were discharged, 37.5% (n=15) were transferred to our ICU, and 25% were transferred to another ICU due to lack of beds in ICU or advanced care. 33.3% (n=5) of our patients in ICU underwent invasive mechanical ventilation (IMV), 93.3% non-invasive ventilation (NIV) and 40% of them died. 80% of the patients treated with tocilizumab developed elevated liver enzymes up to five times upper normal limits, gradually returning to normal levels during follow-up. Convalescent plasma was given to 6 patients, of whom 50% died.

5.8% of the patients (n=41) were transferred to the ICU. 68.2% of these patients were male and the mean age was 63.3±12.3. NIV was required in 75.6% of the patients in the ICU, whereas 36.5% of the patients underwent IMV. The patients in ICU had predominantly HT and DM (only HT in 4 patients, only DM in 2, and both HT and DM in 14). Only 7 patients had asthma and/or COPD. 34.1% of ICU patients had no underlying comorbidity.

The overall mortality rate was 3.7 and 42.8% in our ICU. Respiratory failure was the most common complication, followed by cardiac arrest in ICU. The median time from hospitalization to death was 6.04±4.08 day, and was not significantly different from survivors. None of the patient survived among patients who underwent IMV. Older age, male sex, low lymphocyte count, CT findings including bilateral involvement

and severe stage, and the need for IMVwere associated with poor prognosis (P=0.047, P=0.048, P=0.029, P=0.047, P<0.001, and P<0.001, respectively).

92.4% of our patients were discharged, only 1.5% (n=10) of them with oxygen concentrator. During the study period 2.4% of the patients, and 16.6% of the patients in ICU were transferred to other ICUs in the city due to lack of beds or more advanced care. Six patients with leukemoid reaction were referred to the hematology outpatient clinic, and one of them was diagnosed as chronic myeloid leukemia. Follow-up after discharge from the electronic health records, which includes all inpatient and outpatient visits of the patients, was revealed that only 8 patients (5 in other hospitals and 3 at home) have been died. The rate of readmission within 30 days was 1.28.

2% of the patients were health-care workers, of whom 13 had positive RT-PCR and one had negative. One of them died in the tertiary hospital where he was transffered.

Discussion

Previously reported studies among patients with COVID-19 have stated predominance of older age and male sex, particularly in hospitalized patients. [2,4,5,12-22] Similarly, 55.5% of our patients were male and the median age was 57.

Older age, male sex and comorbidities were significantly associated with the severity of the disease and mortality.[2,4,5,13-23]It has been reported that 13-73.4% of the patients had comorbidities.[13-15,23] 58.7% of our patients had at least one accompanying comorbidity. The most common one was HT in our study, compatible with the other studies,[3,4,12,13,18,20,24] followed by DM,[3,5,12,13,19,20] and cardiovascular diseases.[5] Obesity was one of the comorbidities reported to affect disease severity and mortality,[4,5,20] but could not be determined in this retrospective study. The incidence of COPD and asthma was lower in our patients (5.9% and 8.9%, respectively), as in the other studies.[2-5,12,18,26]

Fever and cough were frequently reported initial symptoms[2-4,12,19,20,25,26], similarly the most common presenting symptom was cough in this study. Dyspnea on admission was observed in 32% of our patients, as mentioned in other studies.[4,12,15,26]

Elevated CRP, ferritin, D-dimer, and PCT were indicators of poor prognosis.[2-5,17,20,24] Lymphopenia due to viral particle-induced cytoplasmic damage and apoptosis was also correlated with severity of disease and mortality. [2-4,20,23,27]Wang et al. [15] showed that median lymphocyte count [?]800 cell/μL was predictive for severity of the disease and decreased gradually as the disease progress and increased with recovery. In our study, we observed that 18.1% of the patients had lymphopenia on admission, mostly associated with severe disease, and continue to decrease as the disease progressed, improved gradually in survivors, but remained low in non-survivors.

Mo et al. [16] reported that besides increased CRP and LDH levels, thrombocytopenia, low level of albumin, elevated neutrophil and AST were also correlated with poor prognosis, in contrast we did not observe significant differences in these parameters among patients according to disease severity, treatment modality, and mortality. Increased level of troponin [4,5,10,24] and progressive elevation of PCT [23], particularly in patients with critical disease were related with poor prognosis.[4,5,10,24] Significantly higher levels of PCT were observed in our patients with DM and both DM and HT due to high inflammatory response, not secondary bacterial infection, but this was not associated with mortality.

It has been stated that CT is more reliable than RT-PCR testing due to false negative results. [3,28] When compared, Ai et al.[28] reported higher sensitivity of chest CT for diagnosis of COVID-19 than reported by Guan et al.[3](97% versus 86.2%). Thus, CT was performed in all of our patients on admission.

Mo et al.[16] and Feng et al. [24]reported that increased incidence of bilateral pneumonia and pleural effusion associated with severity of disease and poor prognosis. Chest CT revealed that 78.7% of our patients had bilateral lung involvement and 57.9% of them had moderate and severe stage. Only two patient had pleural effusion which was regressed with treatment.

Currently, no effective proven antiviral treatment for patients with COVID-19 has been identified. Wang et al. [29]demonstrated that chloroquine takes part at both entry, and at post-entry stages of the SARS-CoV-2 virus in Vero E6 cells, by increasing endosomal pH required for virus/cell fusion, as well as interfering with the glycosylation of cellular receptors of SARS-CoV. Although Food and Drug Administration (FDA) cautions against use of hydroxychloroquine due to arrhythmias, Satarker et al.[30] stated that hydroxychloroquine plus azithromycin can reduce viral load, and Bhandari et al. [12] observed early recovery with hydroxychloroquine without effectively influencing the overall mortality. The researchers who predominantly preferred hydroxychloroquine treatment [2,11,12,20], reported the rate of mortality as 21%, 2.8%, 20% and 21.2%, respectively. We used hydroxychloroquine plus azithromycin combination in the first wave of the outbreak, and favipiravir, RNA polymerase inhibitor, in the second wave. [31] Although no statistically significant difference was observed in terms of mortality between treatment groups in this study, it was slightly higher in the group treated with favipiravir (3.3% vs 2.3%), may be explained by the fact that the patients who had more severe disease were hospitalized in the second wave when compared with the first wave due to the change in hospitalization criteria according to National Ministry of Health guidelines.

Antibiotics other than azithromycin for possible bacterial infections were used in 41.9% of our patients, similarly reported by Ersan et al.[27] and lower than the other studies 58-100%.[2,3,23-25,27]

Many guidelines and reports stated that CS were contraindicated or not recommended due to the complications including prolonged viremia, hyperglycemia, avascular necrosis, bacterial superinfections, and psychosis.[32-34] Increased risk of disease progression, increased use of antibiotics, prolonged duration fever and length of hospital stay were also reported. [33] Some researchers proposed that the use of CS treatment was not significantly associated with mortality [32,33], while according to the others, early CS might reduce inflammatory response, and prevented the progression of COVID-19 disease. [35,36]

Chinese Thoracic Society have developed an expert consensus statement on the use of corticosteroids in 2019-nCoV pneumonia, and stated that CS should be given low-to-moderate doses ([?]0·5–1 mg/kg per day methylprednisolone or equivalent) for [?]7 days.[37] Li et al. [36] observed no difference between patients who were given low-dose ($<$ 2 mg/kg) and high-dose ($>$2 mg/kg) CS. 51.9% of our patients, particularly in the second wave of outbreak were given CS. No side effect was observed with CS treatment other than hypergycemia in this study.

Tocilizumab, anti-interleukin-6 receptor monoclonal antibody, proposed to reduce progression of the disease and the need for noninvasive or invasive mechanical ventilation or death in hospitalized patients with Covid-19 pneumonia, but it did not improve survival.[38,39] Gupta et al. [40] reported that the risk of mortality was lower in critically ill patients treated with tocilizumab in the first 2 days of ICU admission compared with those who did not. 5.7 % of the patients received tocilizumab, of whom 37.5% were transferred to ICU, 60% were discharged and 40% died. In our opinion, tocilizumab reduces the progression of the disease, the need for ICU and IMV.

Hyperinflammatory response to virus, hypoxia and prolonged immobilization carry a high risk of thromboembolic events. Thus, all of our patients were given LMWH in the second wave of the outbreak, as Casas-Rojo et al. used LMWH at prophylactic doses in 83.4 % of their patients.[2] Although the mortality did not significantly changed when the first and second waves were compared, we think that the treatment with LMWH and CS reduced the mortality rate.

The cytokine storm, excessive production of pro-inflammatory cytokines, is considered responsible for the progression of the disease and mortality. The rate of patients who needed intensive care has been reported to be 5-15.7% in different studies.[2,3,18,22,25,41,42] Mortality varies from 2.08% to 78% in patients with COVID-19 disease[12,14,15,21,24,41,42], and from 1.4% to 72% among ICU patients with COVID-19. [3,4,16,17,27] In the studies conducted in our country, mortality rates between 2.08 and 10.5%[26,27,41,42] have been reported. 5.8% of our patients were transffered to ICU and 36.5% of them underwent IMV. The overall CFR was 0.9 in this study, and the mortality rate was 42.8% in our ICU. Approximately 50% of the patients in ICU had HT and DM. Strikingly, one third of these patients had no underlying comorbidity.

Older age, male sex, low lymphocyte count, CT findings including bilateral involvement and severe stage were associated with poor prognosis in this study. The most common complication was acute respiratory failure, compatible with the other studies.[2,12]

Median hospital lenght of stay ranged from 4 to 53 days within China, and 4 to 21 days outside of China. [43] The duration of hospitalization was important for predicting the average lenght of hospital stay and planning the capacity. The treated patients were discharged to be followed-up in an outpatient setting, and the patients who still need oxygen were discharged with oxygen concentrator for meeting increased bed need. Thus, the median duration of hospitalization was 6.4+-4.8 days in this study, lower than the other studies.[12,15,22,24,26,27] Limitations of the study were being a single-center retrospective study, lack of smoking history, failure to record the oxygen saturation rate on admission at emergency department, inability to detect other common viruses (Influenza A and B, RSV, Adenovirus), inability to calculate BMI due to workload and urgent start of the supportive treatment, and inavailability of remdesivir in our country.

All of the health institutions in our country, without distinction of secondary or tertiary hospital worked mandatorily as a pandemic hospital during pandemic. Although studies from tertiary health institutions of our country are available in literature, this study is the first presenting data from a secondary hospital. Besides infectious disease and internal medicine doctors, other doctors from various clinics and nursing staff worked with great devotion on a voluntary basis in the follow-up and management of the patients with COVID-19. In our opinion, this voluntarism and cooperation was of great importance in the fact that hospitalization periods were short and the mortality rates were similar to those higher level tertiary hospitals.

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Table 1. The demographic and clinical characteristics of the patients on admission

Age (years; mean ± SD)	57.0±15.6 (16-94)
Gender (male/female)	1.24 (388/311)
Duration of disease (days; mean ± SD)	6.4±4.8
Concomitant chronic diseases n, (%)	410 (58.7%)

Hypertension 301 (43.1%)

Diabetes mellitus 126 (18%)

Cardiovascular disease (ischemic heart 65 (9.2%)

disease, congestive heart disease)

Asthma 62 (8.9%)

COPD 41 (5.9%)

Malignancy 8 (1.1%)

Chronic renal disease 16 (2.3%)

Cerebrovascular disease 12 (1.7%)

Infections (Hepatitis B, C) 3 (0.4%)

Others (Behçet disease, Celiac disease, 14 (2%)

ulcerative colitis,epilepsy, romatoid arthritis)

Signs and symptoms n, (%)

Fever (temperature [?]37.3degC) 227 (32.5%)

Fatigue 149 (21.3%)

Sore throat 22 (3.1%)

Cough 348 (49.8%)

Dyspnea 224 (32%)

Nausea/vomiting 56 (8%)

Diarrhea 13 (1.9%)

Myalgia 74 (10.6%)

Headache 36 (5.2%)

Anosmia and ageusia 14 (2%)

Disease severity

Mild 0

Moderate 587 (83.9%)

Severe 112 (16%)

Critical 0

Chest CT imaging n, (%)

Normal 64 (9.2%)

Mild 230 (32.9%)

Moderate 294 (42.1%)

Severe 111 (15.9%)

Pleural effusion 2 (0.28%)

Pericardial effusion 1 (0.14%)

Lesion distribution n, (%)

Unilateral 85 (12.2%)

Bilateral 550 (78.7%)

RT-PCR n, (%)

Positive 509 (72.8%)

Negative 190 (27.1%)

COPD= Chronic obstructive pulmonary disease; RT-PCR= Reverse-transcription polymerase chain reaction;

Table 2. The laboratory findings of the patients on admission

Hemoglobin (110-160 g/L) 13.4+-1.7 (7.7-18.3)

White blood cell count (4-10 x10^3 μL) 7373.2±3592.2 (580-36700)

Platelet count (100-300 x10^3 μL) 224.5±90.0 (21-774)

Lymphocyte count (0.8-4.0 x10^3 μL) 1388.2±695.4 (0-5670)

CRP (0-5 mg/L) 58.4±69.1 (0-359.3)

LDH (135-225 IU/L) 268.0±106.6 (20-956)

Ferritin (30-400 mcg/L) 400.0±383.6 (10.9-2639)

D-dimer (0-500 μg/ml) 848.9±1311.5 (0-21900)

Glucose (74-109 mg/dL) 139.7±70.7 (25-856)

Urea (10-50 mg/dl) 36.1±20.5 (8-195)

Creatinine (0.7-1.2 mg/dL) 1.03±3.58 (0.01-2.91)

ALT (0-41 IU/L) 31.5±29.5 (3-318)

AST (0-50 IU/L) 33.7±30.3 (10-492)

Sodium (136-145 mmol/L) 139.7±47.2 (121-163)

Potassium (3.5-5.5 mmol/L) 4.26±0.49 (2.7-6.17)

Albumin (35-52 g/L) 31.7±4.0 (18.4-44.7)

Fibrinogen (2-4 g/L) 5.38±1.24 (2.28-7.59)

Procalcitonin (0-0.12 ng/ml) 0.31±0.73 (0-5.11)

Troponin (0-0.014 ng/ml) 1.48±7.26 (0-60.7)

ALT=Alanine aminotransferase; AST=Aspartate aminotransferase; CRP= C-reactive protein; LDH= lactate dehydrogenase

Table 3. Treatments and clinical outcomes of the patients

Antiviral treatment n, (%)

Oseltamivir 141 (20.2%)

Favipiravir 469 (67.1%)

Lopinavir/ritonavir 11 (1.6%)

Hydroxychloroquine n, (%) 260 (37.2%)

Azithromycin n, (%) 218 (31.2%)

Intravenous antibiotics n, (%) 293 (41.9%)

Systemic glucocorticoids n, (%) 363 (51.9%)

Anticoagulation (Enoxaparin) n, (%) 543 (77.7%)

Tocilizumab n, (%) 40 (5.7%)

Convalescent plasma n, (%) 6 (0.9%)

Oxygen therapy n, (%) 699 (100%)

Mechanical ventilation n, (%)

Invasive 15 (2.1%)

Non-invasive 31 (4.4%)

Intensive care unit n, (%) 41 (5.8%)

Outcomes n, (%)

Discharge 646 (92.4%)

Discharge from hospital with oxygen 10 (1.5%)
concentrators

Rehospitalization 9 (1.28%)

Death 26 (3.7%)