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Clinical experience of COVID-19 patients: Disease course and treatment features

Aliza Zeidman[1*], Jlal Bathish[1], Ayat Zabida[1], Lihie Eisenberg[1], Fadua Zhalka[1], Weaam Alkeesh[1], Doron Mulla[1], Yair fraison[1], Galina Buzaverov[1], Chen Orenstein[1], Muhammad Kashkush[1], Amen Amer[1], Fathy Mohammden[1], Zinaida Fradin[1], Yury Korobko[1], Pazit Kanter[1], Idan Goren[1], Tamar Gottesman[2], Amir Nutman[2], Shaul Lev[3]

[1]Internal Medicine B – Corona B Department, Hasharon Hospital, Rabin Medical Center, Petah Tikva, Sackler School of Medicine, Tel Aviv University, Israel
[2]Infectious disease unit, Hasharon Hospital, Rabin Medical Center, Petah Tikva, Sackler School of Medicine, Tel Aviv University, Israel
[3]General intensive care unit, Hasharon Hospital, Rabin Medical Center, Petah Tikva, Sackler School of Medicine, Tel Aviv University, Israel

Address for correspondence:
Aliza Zeidman, Head of Internal Medicine B – Corona B Department, Hasharon Hospital. KKL 7, St Petah Tikva, Israel. Phone – 97239372363, Email- alizaz@clalit.org.il

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ABSTRACT

Introduction: The first and only Corona Israeli hospital opened on March 2020 designated to treat positive COVID-19 in-patients solely. We present our clinical experience and outcome on 52 COVID-19 in-patients on Corona B department.
Methods: The research cohort included 52 COVID-19 adult Israeli patients. Information on epidemiologic, demographic, clinical, laboratory, imaging and treatments features. Research individuals were categorised into disease severity categories of mild versus moderate and severe disease was compared.
Results: The mean age among the mild and the moderate-severe disease patients was 57.10 ± 17.69 and 70.07 ± 12.71 years, respectively (p=0.023, 75% had mild disease and the majority were men (55.8%). The most common coexisting comorbidities were hypertension and Diabetes mellitus. The main symptoms were fatigue (73.1%) and cough (63.5%). Laboratory abnormalities included elevated inflammatory markers such as serum ferritin, CRP, D-dimer and Troponin levels. Majority of patients with mild disease had a normal chest x-ray imaging, in contrast to patients with moderate-severe disease (p=0.011). Bilateral pulmonary opacities found in 61.5% of patients with moderate-severe disease, versus 18.2% of patients with mild disease (p=0.001). The patients received varied treatments, including O_2 supplementation, inhalations, High flow nasal oxygen, antibiotics, glucocorticoids, Hydroxychloroquine, Tocilizumab, anticoagulation and physiotherapy.
Conclusions: There was difference between patients with mild disease compared to moderate to severe disease in terms of clinical, laboratory and imaging results, course of disease and treatment. Hopefully, our study notions will contribute to the COVID-19 knowledge growing field, and might help understating the disease course and treatments development.

Key words: SARS-CoV-2, COVID-19, Pandemic, COVID-19 hospital, Israeli patients

Introduction

March 11, 2020 was a crucial day for the worldwide population and for the Israeli citizens in particular. It was the date of the World Health Organization (WHO) declaration on a pandemic of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) disease (COVID-19) [1], and it was also when social distancing was enforced in Israel for the first time, in order to limit the infection spreading [2].

The COVID-19 pandemic poses tremendous threat as a rapidly spreading disease, and has significant consequences on the global public health, as there is no vaccines nor known treatments available yet for the novel virus [1]; Hundreds of thousands of patients have died due to the pandemic worldwide [3]. It is assumed that respiratory droplets and contact transmission are the main routes of transmission [1], with the respiratory system being the primarily target of the virus, consequently manifesting as integration of both upper and lower respiratory symptoms [4]. The clinical spectrum of the disease is ranging from no symptoms to mild upper respiratory tract infection, severe pneumonia, respiratory failure and death [5]. Since December 2019, back when an unidentified cause of pneumonia emerged, and to nowadays, more than 4 million cases were diagnosed with the coronavirus worldwide [3].

The first case of COVID-19 in Israel was confirmed on 21 February 2020 [6], and as a sequel to the in-country virus spreading, on March 2020 Hasharon Hospital was reopened as the first COVID-19 Israeli hospital, designated to treat positive COVID-19 inpatients solely. The new hospital departments included three COVID-19 internal wards and one COVID-19 Intensive care unit (ICU), with 200 hospitalization beds in total and more than 1,000 medical staff. During this time, a total of 52 patients were admitted to our ward, Corona B ward, and details on their characteristic features, clinical course of symptoms, laboratory results, imaging and treatments were collected during their hospitalization period. We show for the first-time details on Israeli positive COVID-19 inpatients population and their clinical experience in the first COVID-19 Israeli hospital.

Methods

The research cohort included 52 adults' Israeli patients who were tested positive for COVID-19 in a PCR test and were admitted to the Corona B ward. COVID-19 diagnosis was based on nasopharyngeal and oropharyngeal swab specimens collected by health care professional and following detection of SARS-CoV-2 RNA by Reverse Transcriptase polymerase chain reaction (RT-PCR: Allplex™ 2019 Ncov Assay by Seegane).

Study period was from March 25, 2020 to April 19, 2020. The demographic, clinical, laboratory, imaging and treatments data were extracted from the hospital medical files; for each subject we had information on age, gender, comorbidities, smoking status, influenza vaccine status, hospitalization dates, illness onset date, PCR tests dates and their results, symptoms, laboratory results, imaging findings, treatments and status at discharge from the ward. Blood examinations included complete blood count, serum ferritin and D-dimer, serum chemistry tests (including liver enzymes), serum C-reactive protein (CRP) and serum troponin. When a patient had more than one blood test sample value, we included in the analyses only one value: The minimal value for the white blood cell count (WBC) and the absolute lymphocytes count values, and the maximal values for the rest of the blood tests. Chest X-ray imaging was performed to the majority of patients during their hospitalization period (46 out of 52 patients).

Research individuals were categorised into 3 disease severity categories (mild, moderate and severe) according to their symptoms and vital signs. **Mild disease definition:** mild upper respiratory infection including sore throat, muscle ach and general weakness without pneumonia, normal chest X Ray. **Moderate disease definition:** Dry cough, body temperature > 38^0 C, accompanied by respiratory rate > 30 respirations/minute, respiratory distress, or saturation<94% (measured in room air), and bilateral pneumonia on chest X ray. **Severe disease definition:** patient with respiratory failure, bilateral pneumonia on chest X-ray compatible with acute respiratory distress syndrome (ARDS), sepsis or shock.

Statistical analyses were performed in the SPSS software. Demographic and clinical characteristics were provided using descriptive statistics. Continuous variables were presented as mean (± Standard deviation), and categorical variables were presented as n (%). Two cohort sub-groups were analysed: Patients with mild disease versus patients with moderate-severe disease. In order to compare differences between these two sub-groups we used the following tests: Mann-Whitney-Wilcoxon test, student's t test, $\chi 2$ test or Fisher's exact test. A 2-sided $\alpha < 0.05$ was considered statistically significant. Boxplots were drawn in order to describe laboratory findings results, including white blood cells (WBC), Absolute lymphocyte count, serum ferritin, D-dimer, Aspartate Aminotransferase (AST), Alanine transaminase (ALT), Lactate dehydrogenase (LDH), troponin and CRP.

Results

1. Positive COVID-19 Patients characteristics features

The research cohort included 52 patients: The youngest individual was 20 years old while the oldest was 90 years old (Table 1). Man were the majority (n=29, 55.77%), and the mean age was 60.34 ± 17.41 years. The oldest patients were those who were diagnosed with moderate-severe disease (mean age of 70.07 ± 12.71 years). The ratio between men and women was 1.6-fold among the moderate-severe patients. The mean age for men and women was 64.03 ± 17.41 and 55.69 ± 21.10 years respectively. 75% had mild disease (n=39), 19.23% had moderate disease (n=10) and 5.77% had severe disease (n=3) (Table 1). Only 5 patients were smokers (9.6%), all of whom had mild disease. 16 patients had recent influenza-virus vaccine (2019-2020), and the majority of them (12 patients) had mild disease.

Table 1: Positive COVID-19 patient's characteristics feature:

		Total patients (n=52)	Mild disease (n=39)	Moderate-Severe disease (n=13)	p value
Gender	Men	29 (55.8%)	21 (53.8%)	8 (61.5%)	0.629
	Women	23 (44.2%)	18 (46.2%)	5 (38.5%)	
Age (years)	Total	60.34 (±17.41)	57.10 (±17.69)	70.07 (±12.71)	0.023
	Men	64.03 (±13.07)	62.09 (±12.97)	62.12 (±12.72)	
	Women	55.69 (±21.10)	51.27 (±20.85)	71.60 (±14.02)	
Comorbidities	Diabetes mellitus	16 (30.8%)	11 (28.2%)	5 (38.5%)	0.506
	Hypertension	23 (44.2%)	14 (35.9%)	9 (69.2%)	0.036
	IHD[a]	7 (13.5%)	3 (7.7%)	4 (30.8%)	0.056
	COPD[b]	1 (1.9%)	1 (2.6%)	0 (0%)	1.000
	Pulmonary diseases	3 (5.8%)	3 (7.7%)	0 (0%)	0.564
	CHF[d]	1 (1.9%)	0 (0%)	1 (7.7%)	0.250
	CKD[e]	3 (5.8%)	2 (5.1%)	1 (7.7%)	1.000
	OSA[f]	6 (11.5%)	3 (7.7%)	3 (23.1%)	0.157
	Obesity[g]	6 (11.5%)	3 (7.7%)	3 (23.1%)	0.157
	Active hematologic malignancy	1 (1.9%)	0 (0%)	1 (7.7%)	0.250
Active Smoker status[h]		5 (9.6%)	5 (12.8%)	0 (0%)	0.314
Positive Influenza vaccine status[i]		16 (30.8%)	12 (30.8%)	4 (30.8%)	1.000

Variables are described as mean ± standard deviation for continuous variables and as n(%) for categorical variables. p values comparing mild disease patient and moderate-severe disease patients; [a] 2-sided $\alpha < 0.05$ was considered statistically significant. a Ischemic heart disease; [b]Chronic Obstructive Pulmonary Disease; [c]Pulmonary diseases other than COPD; [d]Congestive Heart Failure; [e]Chronic Kidney disease; [f]Obstructive sleep apnea; [g]Obesity defined as BMI≥30; [h]Currently active smoker or history of smoking; [i]Positive Influenza vaccine status defined as a patient who received Influenza vaccine in 2019-2020.

RAs for comorbidities, the most common coexisting comorbidity was hypertension (44.2%, 23 patients). The second most common coexisting comorbidity was Diabetes mellitus (30.8%, 16 patients). Only four patients had pulmonary diseases, of which one had COPD. More than 10% of the patients were obese. Comorbidities distributed differently among the severity category groups (Figure 2). More than a third of patients with mild disease had coexisting hypertension, but none had congestive heart failure or active hematologic malignancy. As for the moderate-severe disease patients, almost a third had Ischemic heart disease (30.8%), and almost a quarter had Obstructive sleep apnea (23.1%) or obesity (23.1%). None of the moderate-severe patients had COPD or other pulmonary diseases.

Figure 1- Age distribution among the mild and moderate-severe disease patients:

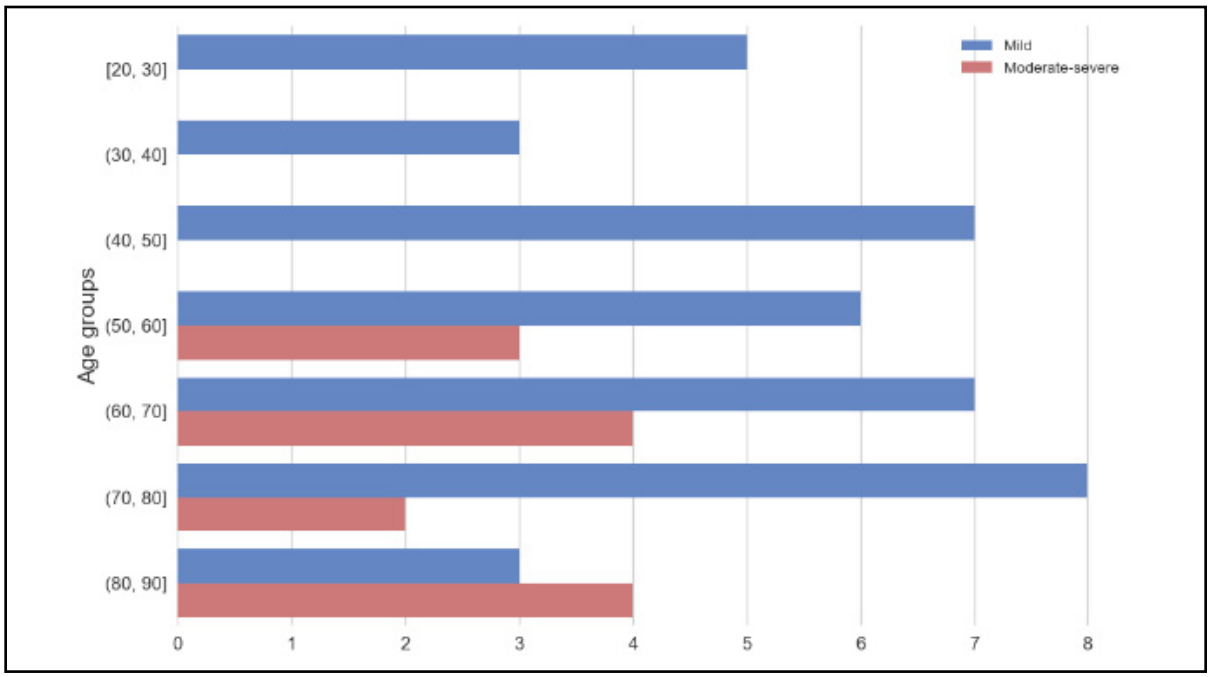
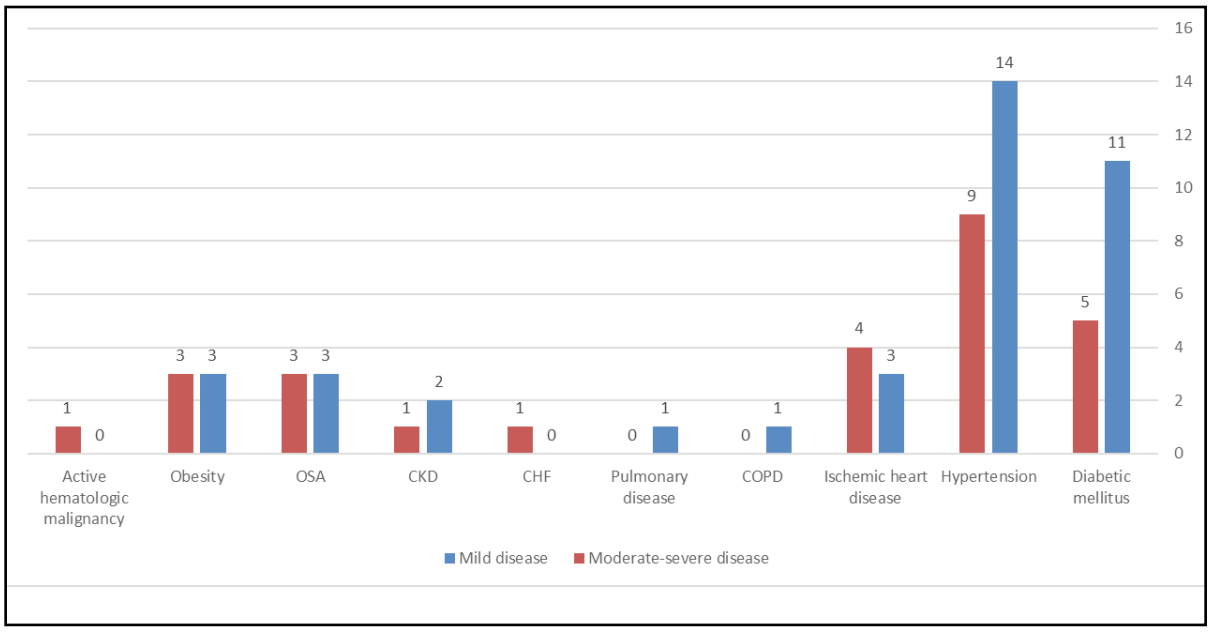


Figure 2- Comorbidities distribution among the mild and moderate-severe disease patients:



2. Positive COVID-19 Patients clinical features

Out of 52 patients, three patients were asymptomatic along their hospitalization period. The most common symptom among the 49 symptomatic patients was fatigue (38 patients, 73.1%) (Table 2); followed by cough (33 patients, 63.5%)and fever (48%, defined as temperature>38^{0}C Almost half of the patients (46.2%) had dyspnoea and one-quarter of the patients had diarrhoea.Some patients had sensory changes: Changes in sense of taste (19.2%) and sense

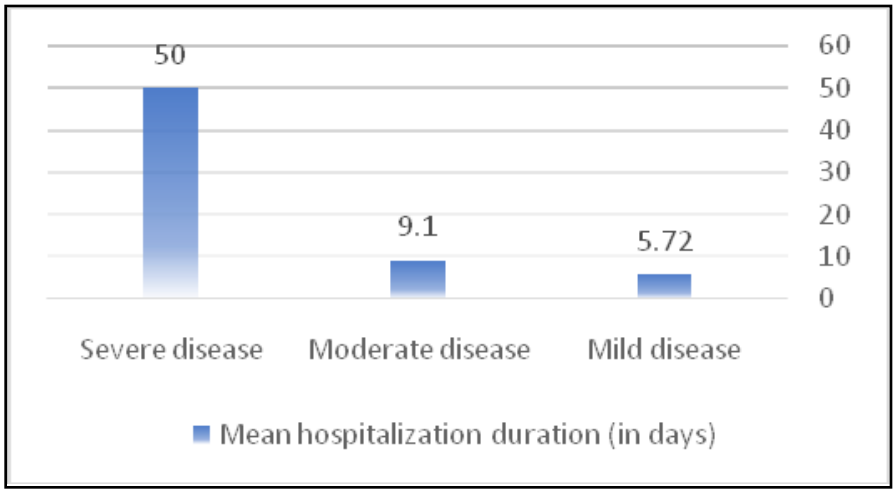
of smell (15.4%). Less than 10%of patients had rhinorrhoea, myalgia or arthralgia symptoms. Tachipnea was observed in 13.5%of patients, and mean systolic blood pressure and diastolic blood pressure were 137.27 ± 16.83 and 74.12 ± 11.36 respectively. Time interval between illnessonset(first day of symptoms) and positive COVID-19 PCR test date ranged from -1 days to 20 days. The mean interval value was 5.61 days (±4.69 days). Time interval between illness onsets to severest symptoms day date was 9.38 days (±5.37 days). Hospitalization period distributed differently among patients withmild,moderate and severe disease (Figure 3).

Table 2: Positive COVID-19 patient's clinical features:

		Total patients (n=52)	*Mild disease (n=39)*	*Moderate-severe disease (n=13)*	*p value*
Symptoms	**Cough**	33 (63.5%)	23 (59%)	10 (76.9%)	0.328
	Rhinorrhoea	5 (9.6%)	3 (7.7%)	2 (15.4%)	0.589
	Dyspnoea	24 (46.2%)	12 (30.8%)	12 (92.3%)	<0.0001
	Fatigue	38 (73.1%)	27 (69.2%)	11 (84.6%)	0.472
	Decreased appetite	7 (13.5%)	5 (12.8%)	2 (15.4%)	1.000
	Diarrhoea	13 (25%)	9 (23.1%)	4 (30.8%)	0.714
	Myalgia	5 (9.6%)	4 (10.3%)	1 (7.7%)	1.000
	Arthralgia	1 (1.9%)	1 (2.6%)	0 (0%)	1.000
	Changes in the sense of smell	8 (15.4%)	7 (17.9%)	1 (7.7%)	0.662
	Changes in the sense of taste	10 (19.2%)	8 (20.5%)	2 (15.4%)	1.000
	Chest pain	6 (11.5%)	4 (10.3%)	2 (15.4%)	0.632
Vital signs	**Fever**	25 (48.1%)	14 (35.9%)	11 (84.6%)	0.002
	Tachypnea	7 (13.5%)	1 (2.6%)	6 (46.2%)	0.001
	SBP[b] (mmHg)	137.26 (±16.83)	137.82 (±18.72)	135.61 (±9.53)	0.687
	DBP[c] (mmHg)	74.11 (±11.35)	75.07 (±10.91)	71.23 (±12.61)	0.338
Time intervals (in days)	**Time from illness onset to positive PCR test[d]**	5.61 (±4.69) (n=49)	5.61 (±5.12) (n=36)	5.61 (±3.37)	0.615
	Time from illness onset to severest symptoms day	9.38 (±5.37) (n=49)	9.11 (±5.84) (n=36)	10.15 (±3.84)	0.242

Variables are described as mean ± standard deviation for continuous variables and as n(%) for categorical variables. p values comparing mild disease patient and moderate-severe disease patients; a 2-sided $\alpha < 0.05$ was consideredstatistically significant. [a] Fever defined as body temperature ≥38°C;[b]Mean Systolic Blood Pressure; [c] Mean Diastolic Blood Pressure;[d]Illness onset defined as the first day of symptoms.

Figure 3: Hospitalization period distribution among the mild, moderate and severe disease patients:



3. Positive COVID-19 Patients laboratory results

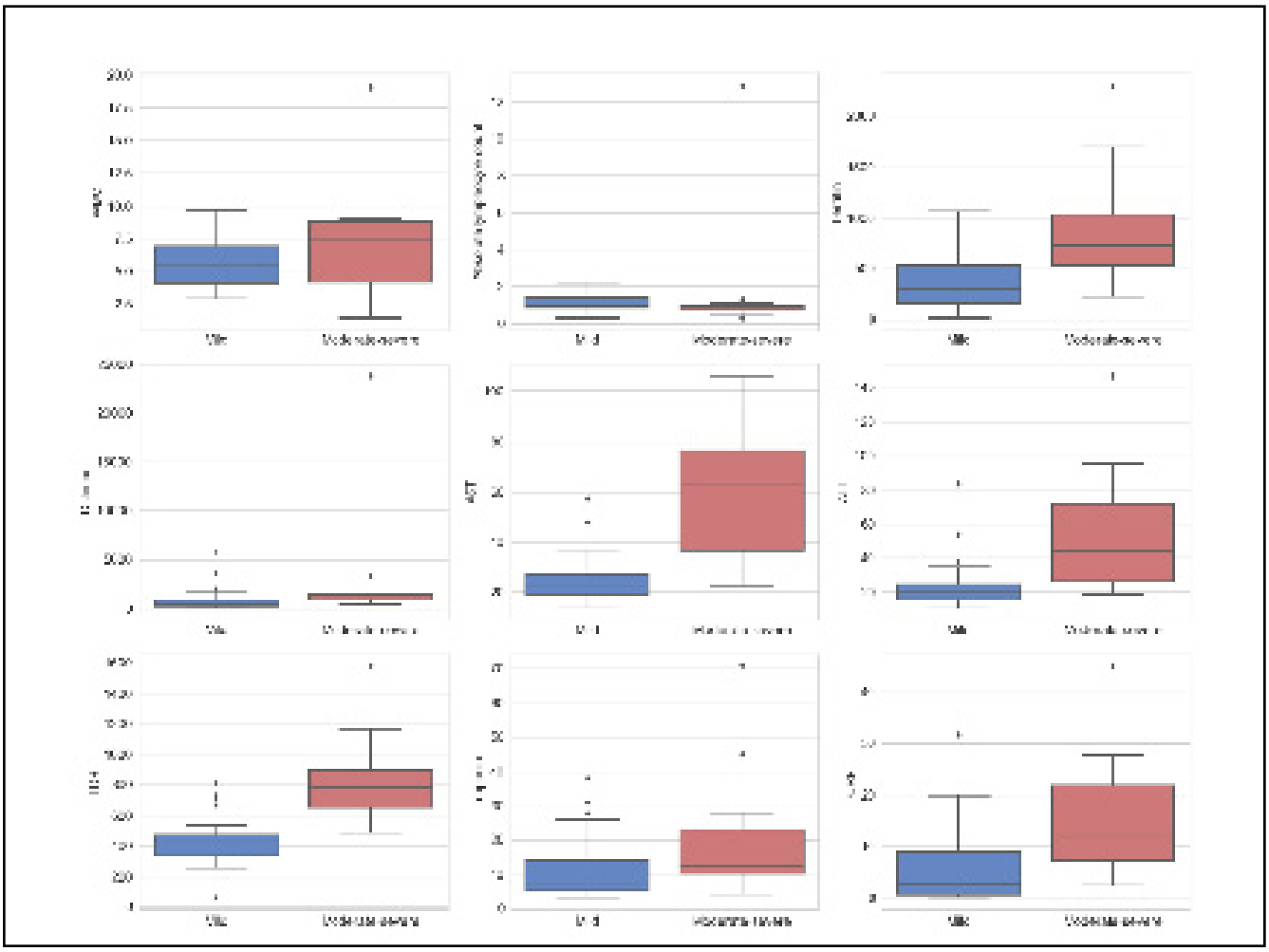
Blood tests for complete blood count, chemistry and inflammation markerswere taken duringthe hospitalization period (Table 3).Mean WBC count value was in normal limits (6.38 ± 3.86).The minimal and maximal WBC count values were 1.47 and 19.21 respectively. Mean absolute lymphocytes count was 1.25 ± 1.74, with minimal value of 0.3 and maximal value of 12.9. Patients had high serumferritin; D-dimer, LDH, troponin and CRP levels (mean value of 510.27, 1545.67, 546.45, 14 and 8.30 respectively). Liver enzymes levels were at the normal range, with mean AST value of 34.59 ±21.87 and ALT value of 31.72 ± 26.12(Figure 4).

Table 3: Positive COVID-19 patient's laboratory results:

Laboratory findings	*Total patients*	*Mild disease*	*Moderate-severe disease*	*p value*
White blood cell count *(normal range: 4.80-10.80 K/micl)*	6.38 (±3.36) (n=50)	5.77 (±1.99) (n=37)	8.10 (±5.46) (n=13)	0.192
Absolute lymphocyte count *(normal range:0.9-5.2 K/micl)*	1.25 (±1.74) (n=50)	1.10 (±0.49) (n=37)	1.70 (±3.37) (n=13)	0.145
Serum ferritin *(normal range:30-400 ng/mL)*	510.27 (±452.38) (n=44)	361.12 (±263.24) (n=32)	908.01 (±606.15) (n=12)	0.001
Serum D-Dimer *(normal range:<500)*	1545.67 (±3636.16) (n=43)	902.58 (±1157.25) (n=31)	3207.00 (±6351.00) (n=12)	0.002
Serum AST *(normal range:0.0-35 U/L)*	34.59 (±21.87) (n=46)	25.51 (±10.60) (n=33)	57.63 (±26.3) (n=13)	<0.0001
Serum ALT *(normal range:0.0-45 U/L)*	31.72 (±26.12) (n=49)	23.05 (±13.49) (n=36)	55.75 (±36.71) (n=13)	<0.0001
Serum LDH *(normal range:230-480 U/L)*	546.45 (±268.83) (n=46)	437.18 (±155.85) (n=33)	823.84 (±300.10) (n=13)	<0.0001
Serum Troponin *(normal range:0-4 ng/L)*	14 (±13.22) (n=45)	11.63 (±9.38) (n=33)	20.50 (±19.50) (n=12)	0.060
Serum CRP *(normal range:0.0-0.5 mg/dL)*	8.30 (±9.40) (n=50)	5.73 (±6.80) (n=37)	15.61 (±12.00) (n=13)	0.001

Variables are described as mean ± standard deviation for continuous variables. p values comparing mild disease patient and moderate-severe disease patients; a 2-sided $\alpha < 0.05$ was consideredstatistically significant.

Figure 4: Positive COVID-19 laboratory features boxplots



4. Positive COVID-19 Patients chest x-ray imaging features

Out of the 52 research individuals, 46 patients have performed chest x-ray during their hospitalization period. The majority of these had increased interstitial markings or bilateral pulmonary opacities. Only12 patients (26.1%) had normal chest x-ray. Among the patients with mild disease, the majorityhad normal chest x-ray, on the other hand, all patients with moderate to severe disease, had pathological imaging. Mostly bilateral pulmonary opacities.

Table 4: Positive COVID-19 patient'schest x-ray imaging features:

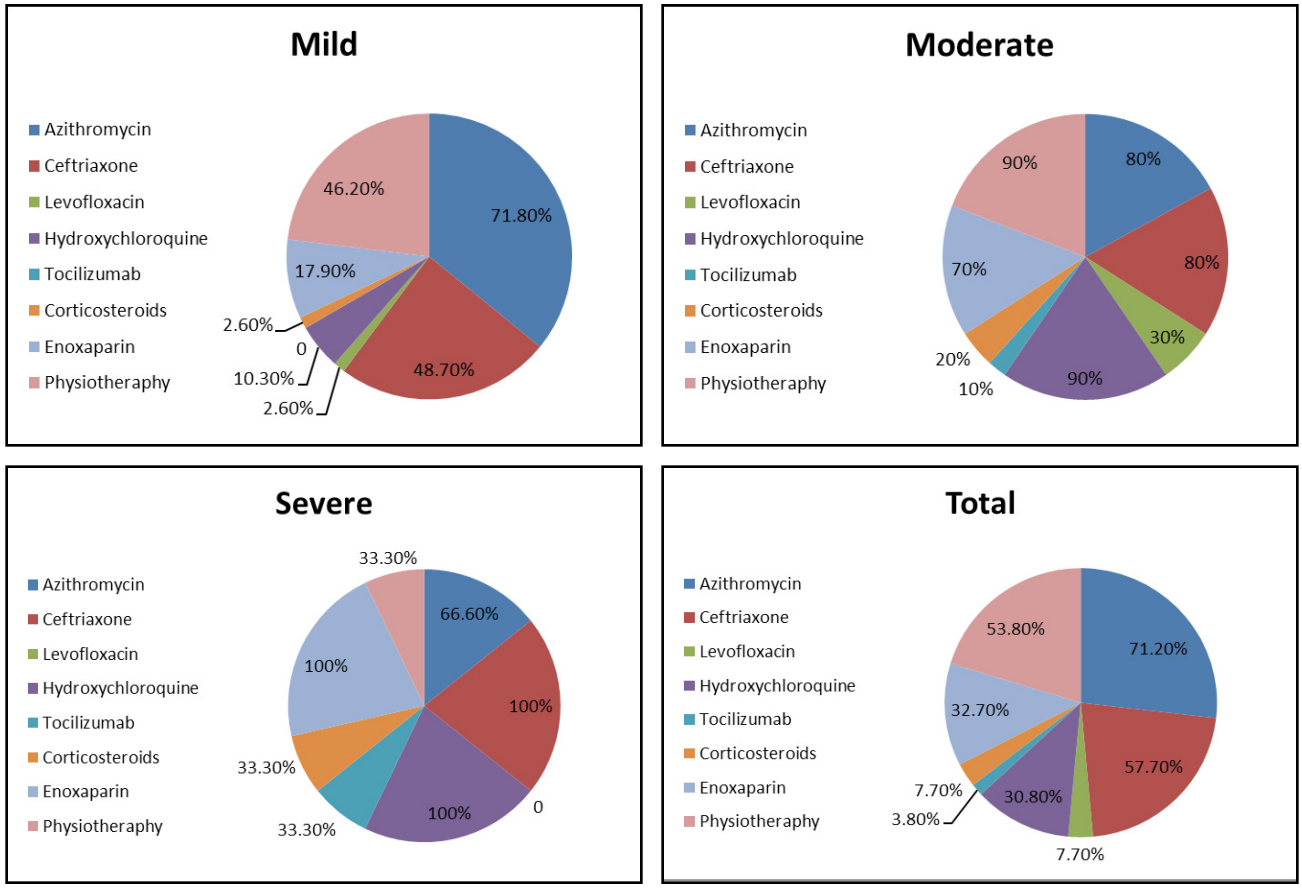
		Total patients (n=46)	*Mild disease (n=33)*	*Moderate-severe disease (n=13)*	*p value*
Chest X-ray imaging features[a]	**Normal X-ray**	12 (26.1%)	12 (36.4%)	0 (0%)	0.011
	Increased interstitial markings	14 (30.4%)	9 (27.3%)	5 (38.5%)	0.493
	One-sided pulmonary opacity	10 (21.7%)	7 (21.2%)	3 (23.1%)	1.000
	Bilateral pulmonary opacities	14 (30.4%)	6 (18.2%)	8 (61.5%)	0.010

Variables are described and as n(%) for categorical variables. p values comparing mild disease patient and moderate-severe disease patients; a 2-sided $\alpha < 0.05$ was considered statistically significant.[a]46 out of 52 patients have performed chest x-ray imaging.

5. Positive COVID-19 Patients treatments features

Varied treatments were used during hospitalization of covid-19 patients, includingO2 supplementation, inhalations, HFNO, antibiotics, immunosuppression, anticoagulation and additionalrespiratory physiotherapy (Figure 5).12 of 52 patients (23.1%) were treated with O2 supplementation: none of those with mild disease; 9 (90%),of those with moderate disease, and all the patients with severe disease (3 patients, 100%).32 out of 52 patients (61.5%) were treated with inhalations: 22 with mild disease(56.4%), and 100%patients with moderate disease patients (10 patients). One patient with moderate disease was treated with HFNO. Three patients needed intubation and mechanical ventilation (5.7%), and theyall hada severedisease. Antibiotic treatments included the following drugs: Azithromycin, Ceftriaxone and Levofloxacin. 71.2% of total patients were treated with Azithromycin, 57.7% of them were treated with Ceftriaxone and only four patients were treated with Levofloxacin (7.7%). In addition, 16 patients were treated with Hydroxychloroquine (30.8%). In total, only two patients were treated with Tocilizumab (3.8% of total patients), four patients were treated with glucocorticoids (7.7% of total patients), and 17 patients (32.7% of total patients) received preventive Enoxaparin. More than half of the patients (53.8%) receivedadditional respiratory physiotherapy treatment.

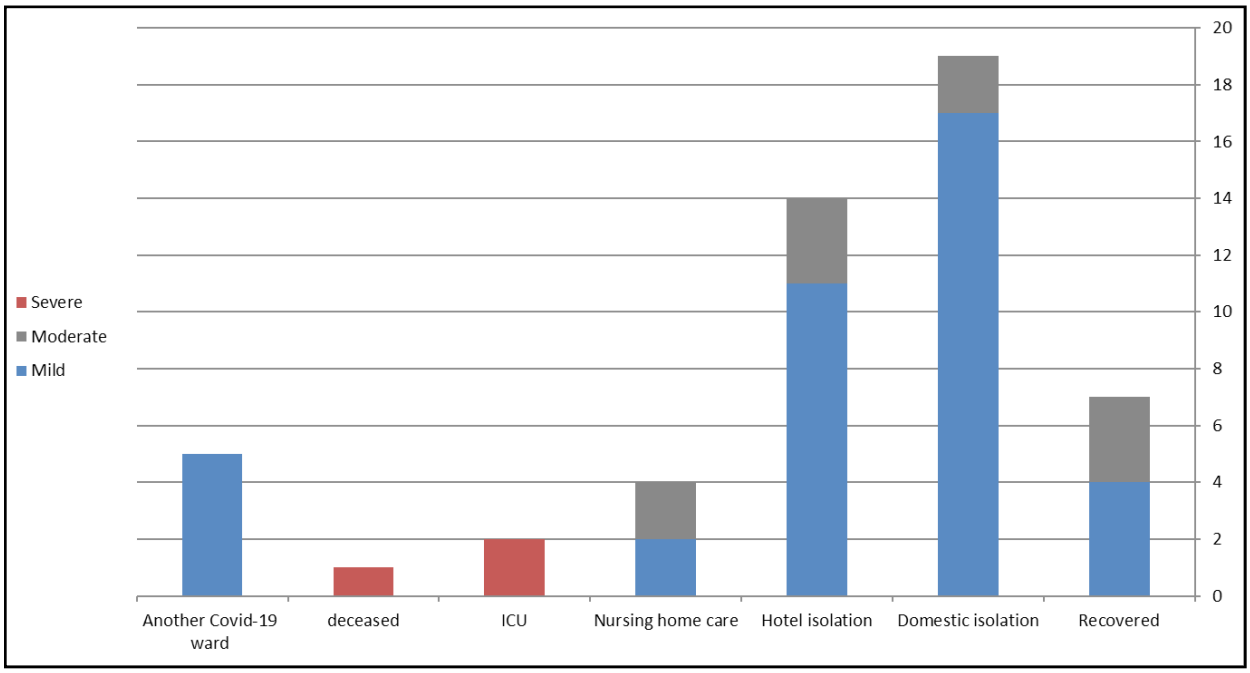
Figure 5: Treatments distributionamong the mild, moderate and severe disease patients:



6. Positive COVID-19 Patients status on discharge

On their last hospitalization day in our ward, the cohort individuals had varied clinical presentationsand as a consequence were discharged from our department to diverse destinations (figure 6). Some of the patients fully recovered and were discharged home,while others were transferred to COVID-19 patient's hotel isolation, in-house isolation, or nursing-home care isolation. Two patients were not discharged from the hospitalbut rather transferred to other departments (ICU or other COVID-19 ward in the hospital). One patient deceased during the hospitalization period.

Figure 6: Patients status and discharge destinationson hospitalization end date:



Discussion

The COVID-19 pandemic assumed to start in December 2019 in Wuhan, China, have since spread throughout the world. The first Israeli case of positive COVID-19 was described on February 2020; Currently (May 2020) there are more than 16,000 individuals that were diagnosed with the infection since then. Our cohort included 52 Israeli patients who admitted to the Corona B ward, where only positive COVID-19 patients were admitted, in the first Israeli hospital designated solely to COVID-19 patients.

The majority of Corona B inpatients were men (56%). Interestingly, in contrast to the mild disease patients' sub-group, where the proportions of men and women were similar (ratio of 1.1), among the moderate-severe disease patients the proportion of men was 1.6-fold higher. We noted that the mean age for men was almost 10 years higher than those of women (64 and 56 years respectively). These findings are consistent with the current literature, showing that although there are no differences regarding the number of COVID-19 cases, death and severe disease are two times greater among men compared to women [7]. Cumulative data suggests gender predisposition to COVID-19; it was postulated that men are more prone to COVID-19 as a result of higher smoking rates compared to women in China. Yet, the current literature did not establish an association between smoking and COVID-19 susceptibility in men or in general [8]. None of our cohort individuals with moderate or severe disease was smoker: only five patients were smokers (9%) and all of them had only mild disease. As for age differences, the patients with moderate-severe disease were older by more than a decade than mild disease with mean age of 70.07 ± 12.71 and 57.10 ± 17.69 years respectively ($p = 0.023$). Indeed, older age is already known to be associated with poor outcomes, including greater risk for ARDS, need for ICU care and higher odds of in-hospital mortality [5][9][10]. The association between the immune response and the virus infection has been investigated in several studies; a hypothesis that immunity against prior influenza infection would possibly foster immunity or partial immunity against SARS-CoV-2 emerged [11]. Interestingly, 16 patients of our cohort (830.%) had recent influenza-virus vaccine (performed on 2019-2020), and 75% of them had mild disease Comorbidities were also described as possible risk factor for poor outcome, with greater number of comorbidities among patients who were admitted to the ICU [9]. The most common coexisting comorbidities among our cohort patients had hypertension and Diabetes mellitus. These findings are consistent with studies from China that also demonstrated these specific two comorbidities as the most common ones in COVID-19 patients [12][13]. Among our patients, 69% of those with moderate-severe disease had coexisting hypertension, as compared to 36% of the mild disease patients ($p=0.036$). Surprisingly, all the patients with coexisting pulmonary diseases in our research (including COPD) had only mild disease. A possible explanation would be that patients with pulmonary disease were more adherent to the home-isolation instructions than the general population. Yet, another study demonstrated higher case-fatality rate among patients with chronic respiratory disease (6%) as compared to patients without coexisting comorbidities (0.9%) [1].

More than 10% of the patients were obese; clinical features that were previously described as leading to hospital admission among patients were age > 65 years and obesity [14]. One patient had active hematologic malignancy and he belonged to the moderate disease. A study which analysed the risk for severe COVID-19 disease in patients with cancer, found that patients with cancer might have a higher risk of COVID-19 than subjects without cancer. Furthermore, according to the study, patients with cancer had poorer disease outcomes [15].

The spectrum of symptomatic infection ranges from mild to critical disease. The majority of the cohort individuals had mild disease (75%), while only a quarter of the patients were estimated to have moderate to severe disease. This observation is consistent with the literature worldwide: According to a study from the Chinese Centre for Disease Control and prevention, 81% patients were estimated to have a mild disease while only 14% of the patients had severe disease [16]. We noticed that the most common symptoms among the cohort individuals were fatigue, cough and fever. Indeed, these observations are consistent with the worldwide literature: A study from Wuhan reported that the most common symptoms among their patients were fever, fatigue and dry cough [9]. Moderate to severe patients tends to present with fever (p=0.002), dyspnoea (p=<0.0001) and tachypnea (p=0.001).

Laboratory abnormalities among our cohort individuals included elevated inflammatory markers, such as serum ferritin, troponin and CRP which were significantly higher among moderate to severe patients. We also found significant higher mean serum D-dimer levels which has been linked to higher odds of in-hospital death [5]. Coagulation activation was suggested to be related to sustained inflammatory response to virus [9].

Most patients had chest x-ray imaging during their hospitalization. The majority of patients with mild disease had normal chest x-ray imaging while none of the patients with moderate-severe disease patients had normal chest x-ray (p=0.011), and the most common imaging finding was bilateral pulmonary opacities. These findings are consistent with Yuen Frank et al who investigated the frequency and distribution of chest radiographic findings in COVID-19 positive patients and found that 31% of patients did not have any abnormalities in baseline chest x-ray. Among those with abnormal chest x-ray findings, bilateral consolidation was frequently demonstrated [17].

During hospitalization our patients received varied treatments, including O_2 supplementation, inhalations, AIRVO, antibiotics (Azithromycin, Ceftriaxone and Levofloxacin), glucocorticoids, Hydroxychloroquine, Tocilizumab, anticoagulation and respiratory physiotherapy. Limited data on efficacy and adverse effects regarding COVID-19 treatments, as well as conflicting data among the available studies, made COVID-19 patients treatment strategy a tremendous challenge. For example, one study recommended Hydroxychloroquine for treatment of SARS-CoV-2 infection [18]; another study found that among patient hospitalized in New York, there were no significantly associated differences in in-hospital mortality between patients who were treated with Hydroxychloroquine, Azithromycin, or both, as compared to those who received neither treatment [19]. Yet, some drugs had more promising findings among studies: Tocilizumab is an IL-6 receptor inhibitor who has been considered a suitable candidate for COVID-19 treatment, as the disease is characterised by elevated inflammatory markers (as demonstrated also in our study, with high levels of serum ferritin, D-dimer, CRP). The IL6 cytokine plays an important role in inflammatory reaction, and was described as one of the most important cytokines involved in COVID-19 disease course [20]. Indeed, studies findings support the effectiveness of the drug: repeated dose of the drug for critically ill patients with elevated IL-6 was recommended, a significant improvement in the levels of inflammatory markers (ferritin, D-dimer and CRP) following the treatment was observed, and clinical symptoms improvement among severe disease patients was reported [20][21][22].

Study limitations

Our cohort group sample comprises of 52 cases only with even smaller subgroups: 13 patients with moderate-severe disease and 39 patients with mild disease. There is also no representation of the paediatric population or very mild or asymptomatic patients. Thus, our cohort individuals may represent severe aspect of the disease mainly.

Conclusion

In this study we aimed to present the epidemiological and clinical characteristics of 52 Israeli positive COVID-19 patients who were admitted to our ward, Corona B, in the first and solely COVID-19 Israeli hospital. We explored their laboratory, imaging, and treatments features; and we investigated differences between patients with mild and moderate-severe disease. Hopefully, our study notions will contribute to the COVID-19 knowledge growing field, and might eventually help in future understating of the disease course, as well as vaccine and treatments development.

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