Original Paper

Analysis of the First 300 Cases of SARS CoV2 Infection from the Infection Disease Clinic of Craiova, Romania

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ABSTRACT: COVID-19 is an ongoing pandemic and an intermediate analysis of the first 300 cases treated in the Infectious Diseases Clinic from Craiova has been performed. We have found that most of the cases were asymptomatic or mild, but the severity of the symptomatic cases increases with age. The main comorbidities associated mainly with the severe cases were high blood pressure, obesity, other cardiac conditions, diabetes mellitus and malignancies. Inflammation, coagulation and metabolic disorders are significantly more expressed in critically ill patients. Fatality rate is relatively low, death seems to be associated with old age.

KEYWORDS: SARS CoV2, COVID-19, intermediate analysis.

Introduction

A cluster of "viral pneumonia" has been recognized in late December 2020 in Wuhan city, Hubei province, Popular Republic of China.

Infection due to the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS CoV2)-later named Coronavirus Infectious Disease 2019 (COVID-19)-has soon spread around the globe.

World Health Organization (WHO) first declared the infection "an international public health emergency" on January 30, 2020, then "a pandemic" on March 11.

On March 7, 2021 there are more than 115 million people infected and more than 2.5 million deaths [1,2].

Romania reported the first case on February 21; until March 6 there are 824995 cases and 20854 deaths [3].

First case diagnosed in the Infectious Diseases Clinic from Craiova was recorded on March 6; until now we have treated more than 5900 patients.

We have performed an intermediate analysis of the first 300 cases admitted in our clinic, highlighting the epidemiological, clinical and evolutive aspects.

Materials and Method

This is a retrospective study (March-July 2020) based on information from the patient transcripts, downloaded into a database.

Epidemiological, clinical and evolutive aspects were noted.

The statistical analysis is based on Chi^2 tests (two tails, with Yates's correction), unpaired t test (Student) and one-way ANOVA with post-hoc Tukey HSD test, the statistical significance being recorded for $p<0.05$.

The diagnosis of COVID-19 was established following a positive result of a real-time polymerase chain reaction (RT PCR) test for SARS CoV2.

All patients have signed a consent for allowing the use of their personal data.

The study has been approved by the Ethics Committee of the "Victor Babes" Hospital.

Results

We have recorded 89 (29.66%) asymptomatic, 122 (40.66%) mild, 56 (18.66) moderate and 33 (11%) severe cases.

Average age was 40±17.5 years, most patients being adults (274, 91.33%).

Figure 1 shows the average age and standard deviation for each clinical form taken into consideration; there is a statistical difference between data registered for asymptomatic cases (37.22±13.51 years), mild (27.5±19.54 years), moderate (44.5±13.03 year) and severe forms of COVID-19 (63±10.12 years), p<0.0001 (one-way ANOVA).

Gender ratio was 167 (males)/133 (females). Most patients were from urban settings (233, 77.66%) and from Dolj county (262, 87.33%).

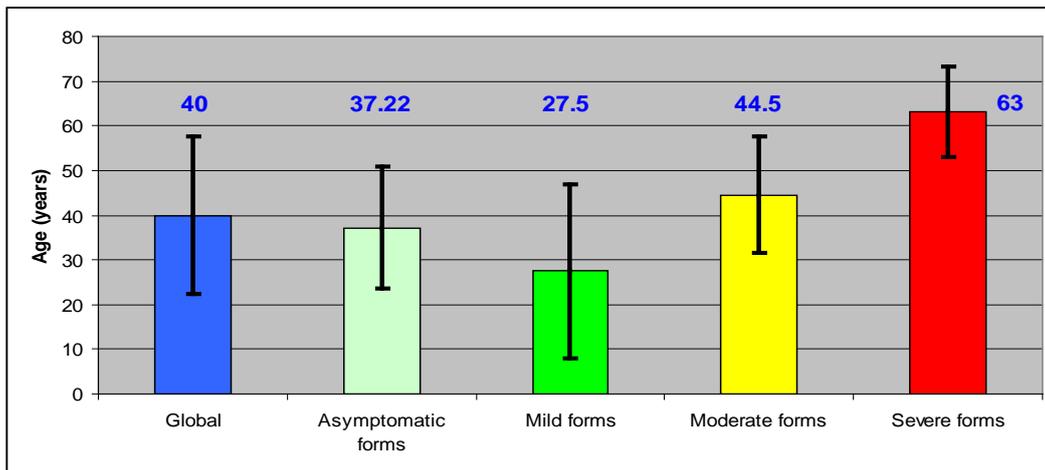The peak of this "first wave" was during April and May (97 and 90 cases, respectively).

Figure 1. Average age for all cases and for each clinical from taken into consideration.

152 (50.67%) subjects had a previous contact with a confirmed COVID-19 case and 59 (19.67%) have recently returned from abroad (mainly from Italy-8, and Great Britain-2 patients).

We have recorded 4 epidemiological clusters (28, 20, 13 and 9 cases, respectively); 29 subjects were from the medical staff of various departments [4].

Data regarding the personal history of the patients are shown in table I; when comparing all data with that from the severe forms of COVID-19, there are statistically significant differences for high blood pressure (p=0.026), obesity (p=0.0005), other cardiac conditions (p<0.0001), diabetes mellitus (p<0.0001) and malignancies (p<0.0001).

Table 1. Data regarding the personal history of the patients.

	Global	Asymptomatic forms	Mild forms	Moderate forms	Severe forms
High blood pressure	100	28	34	20	18
Obesity	48	10	12	12	14
Other heart conditions	41	9	6	8	18
Diabetes mellitus	29	2	3	9	15
Malignancies	11	1	1	2	7
Chronic respiratory conditions	10	0	1	3	6
Chronic kidney disease	7	0	6	1	0
Tuberculosis	1	0	1	0	0
HIV infection	1	0	1	0	0

The main complaints of the patients when admitted into the hospital are shown in Figure 2.

No statistical differences were noticed between the clinical forms of the disease.
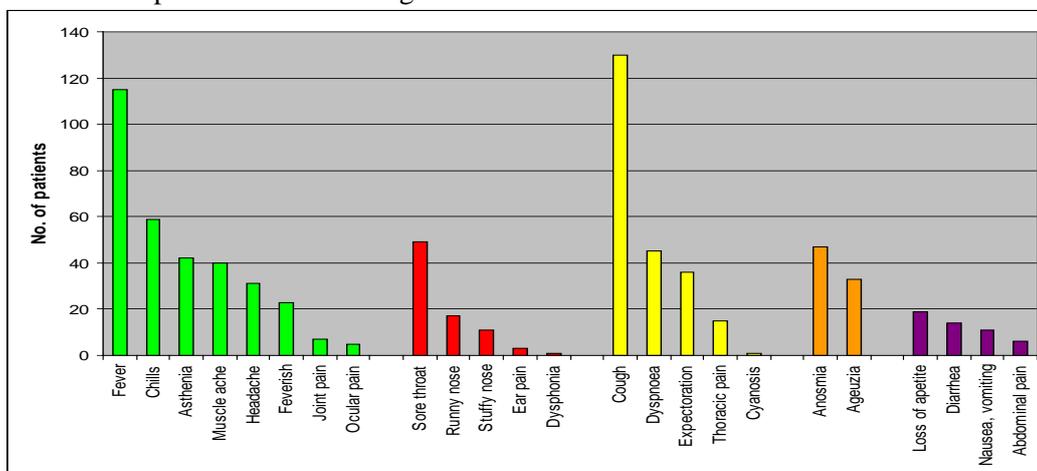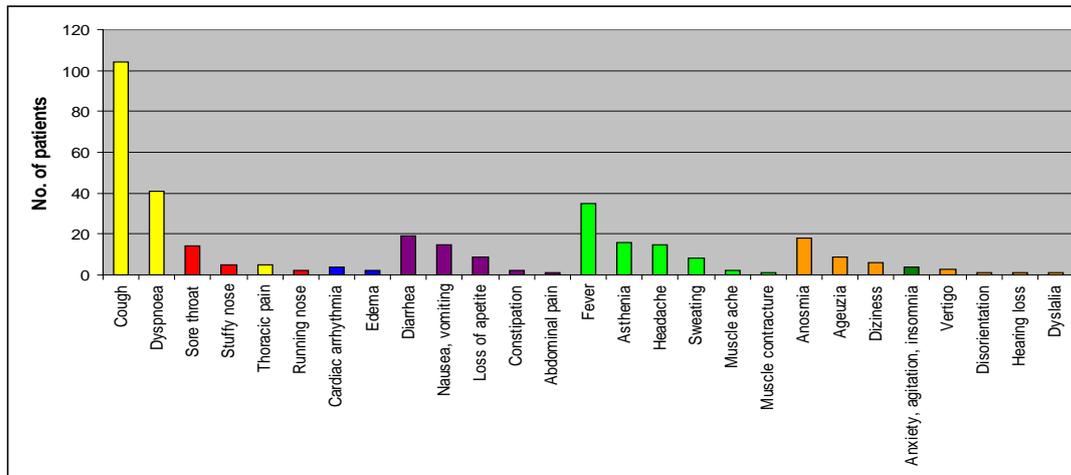

Figure 2. Main complaints of the patients from the study group; legend: green-general symptoms, red-upper respiratory tract infection symptoms, yellow-lower respiratory tract symptoms, orange-neurologic symptoms, purple-digestive symptoms.

Most physical findings do not differentiate between clinical forms, except for dyspnea, cyanosis, oxygen saturation below 90%, coma or necessity for intubation, commonly encountered and defining for the severe form of infection due to SARS CoV2. After hospital admission, the newly emerged symptoms are shown in Figure 3.

Figure 3. Newly recognized symptoms after hospital admission; legend: green-general symptoms, red-upper respiratory tract infection symptoms, yellow-lower respiratory tract symptoms, orange-neurologic symptoms, purple-digestive symptoms, blue-cardiologic symptoms, dark green-psychiatric symptoms.

Overall, the laboratory data show (average): leukocyte number 7003.35 ± 3116.41/ cubic millimeter (mm^3), erythrocytes sedimentation rate/1 hour (1h) 25.46 ± 28.49 millimeter (mm), blood glucose 123.2 ± 56.3 milligram per deciliter (mg/dL), serum lactate 1.68 ± 0.39 milliequivalent per liter (mEq/L), troponin 13.11 ± 20.59 micrograms per liter (μg/L; number of tests, n=27), D dimers 753.39 ± 980.6 micrograms per milliliter (μg/mL; n=55).

By comparison the following values (on average) were noted for severe cases: leukocyte number 8666.67 ± 4565.88/mm^3 (p=0.006), erythrocytes sedimentation rate (1h) 43.05 ± 28.9mm (p=0.0008), blood glucose 304.45 ± 273.58mg/dL (p<0.0001), serum lactate 3.47 ± 3.84mEq/L (p<0.0001), troponin $90.81 \pm 202.08$$\mu$g/L (n=5, p=0.04), D dimers $1314.22 \pm 1347.54$$\mu$g/mL (n=23, p=0.04).

As regarding the blood glucose, the number of patients with values above 120mg/dL vas 47 in total, but 24 of them have severe form of COVID-19 (p<0.0001).

No statistically significant differences were noted for the laboratory data in asymptomatic, mild or moderate forms of COVID-19.

Table II summarizes the aspects of lung imaging (all vs. critical cases).

Table 2. Data on lung imaging of patients; legend: NS=not statistically significant.

Chest X ray aspects	Global	Critical forms	p
normal lung imagery	**158**	2	<0.0001
consolidation	62	**18**	<0.0001
interstitial aspect	50	3	NS
"ground-glass" opacities	21	6	*0.057*
bronchopneumonia	5	**3**	0.04
pleural effusion	3	0	NS
abscesses	1	1	NS

Patients have been treated according to the national guidelines and the following antiviral regimens have been used: Lopinavir/Ritonavir, 200/50 milligrams (mg)/capsule, 2 capsules every 12 hours, 7-10 days-39 patients, Hydroxychloroquine, 200mg/pill, 800mg for the first day, then 400mg/day for another 4 days-57 cases, combination of Hydroxychloroquine and Lopinavir/Ritonavir-42 cases and Remdesivir, 100mg/vial, 200mg intravenously for the first day, then 100mg for another 4 days-1 case.

All patients with moderate and severe forms received steroids (Dexamethasone, vials, 8 mg/day intravenously, 10 days) and anticoagulant therapy (Enoxaparin, prefilled syringe, 4 to 6 milliliters subcutaneously, once or twice a day, depending on the patient's body weight, throughout the hospitalization).

The median length of hospital stay was 13 days [limits between 2 and 35 days].

The results of hospitalization is shown in Figure 4.

All 16 patients with worsen condition have been transferred to another clinic, but unfortunately 14 of them died; thus, the mortality ratio was 5.33%.

The average age of deceased patients was 72.33±7.57 years (p<0.0001 as compared with average age of all cases).
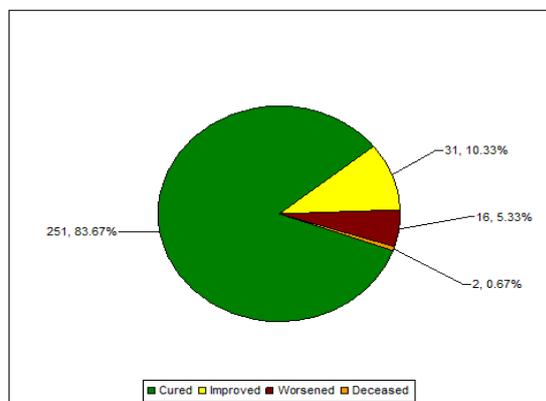
Figure 4. Result of hospitalization.

Discussion

Most of our cases were asymptomatic or mild form of COVID-19 and, fortunately, only 11% of cases were severe, with a fatality ratio of 5.33% which, at that time, was in accordance with the data from the medical literature [5,6,7,8,9,10].

The age of the patients seems to be the most important factor influencing the severity of the disease and death; it should be noted that there are a 13 years difference between the average age of the patients diagnosed with moderate and severe forms and 10 years difference between the average age of patients with severe forms and those who died.

We did not register severe forms in our pediatric patients, however they represented only a minority of the total cases.

Globally there is only a small predominance of males versus female patients (M vs. F ratio=1.25) and the ratio increases for moderate (2.29) and severe forms respectively (1.75), however without statistical significance, probably due to the small number of patients taken into account.

A similar result is shown in the medical literature [5,6,7,8].

Our patients had multiple comorbidities and, as expected due to the increased age of the patients, most of them were detected in severe cases. Similar results were published on this matter [5,6,7,8,9,10], raising the question of their impact on COVID-19 evolution.

Indeed, these sufferings are among the most common causes of morbidity and mortality around the globe [11], however there are a series of data showing that they may contribute to the worsening of the infection due to the novel coronavirus and, possibly, to the death of the patients [12,13,14,15].

As demonstrated by other studies [5,8,9,10], the main complaints of the patients, prior to hospital admission, are cough, fever, chills, sore throat, dyspnea and anosmia; after admission, cough, dyspnea and fever predominate.

Laboratory data show that inflammation, coagulation and metabolic disorders predominate in severely ill patients.

Current data suggest that the hyperinflammatory response-also known as the cytokine storm-of the host (and not the virus itself) is responsible for the disease severity and, possibly, death of the patients [16] and, also there is an interplay between inflammation and coagulation disorders [17].

The lungs seem to be the main organs affected by the disease, but recent data show that COVID-19 might be a multisystemic disease, at least in severe cases; in that respect, the higher troponin level seen in critically ill patients might be a sign of myocardial involvement, although the exact mechanism is not known [18].

Lung imagery shows that consolidation and bronchopneumonia's aspect predominate in severe cases, but we have not confirmed any bacterial superinfection; thus, the role of antibacterial therapy remains controversial.

The majority of the patients with COVID-19 gets cured and the fatality rate is rather low; old patients are at high risk of death, in accordance with other studies [5,7,8].

Conclusions

1. Most of the cases were asymptomatic or mild;

2. Severity of the symptomatic cases increases with age;

3. Half of the patients had a previous contact with a confirmed case and almost 20% came from abroad;

4. High blood pressure, obesity, other cardiac condition, diabetes mellitus or malignancies are the main comorbidities associated with severe cases;

5. Inflammation, coagulation and metabolic disorders are significantly more expressed in severe cases;

6. Fatality rate is relatively low; deceased patients had a significantly higher age than other patients diagnosed with COVID-19.

Acknowledgments

LIG developed the study design and performed the analysis of the data.

FD, ACS, LD were responsible for data collection.

LIG, FD, ACS, LD wrote the first draft of the manuscript. All authors read and approved the final manuscript.

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Conflict of interests

None to declare.

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