

Several Data of Infection in COVID-19 Patients at the First University Clinic of Tbilisi State Medical University, Georgia

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ABSTRACT

The outbreak COVID-19 which had begun from China at the end of 2019 is a major public health issue. Public health and infection control measures are urgently required to limit the spread of this global viral infection. 160 COVID-19 patients were admitted to the First University Clinic of Tbilisi State Medical University (TSMU) during March-June 2020. We provided the retrospective study of these cases according to gender and age of patients, lethal outcome rate, hospitalization days and frequency of different comorbid diseases. Also, observations were carried out on patients taking angiotensin converting enzyme (ACE) inhibitors and angiotensin-AT1 receptor blockers due to heart failure or arterial hypertension. Among COVID-19 patients, frequency of lethal outcome was not significantly different between female and male genders (44.4% vs. 55.6%). Prevalence of this disease was the most common in patients with 30-59 years of ages (45.3%). Average hospitalization days were 21. Mortality rate was 5.6%, mostly in age above 60 (88.8%). Among lethal outcome patients, 88.8% had comorbid diseases. Heart failure, acute kidney injury, sepsis, essential arterial hypertension III, mitral valve defect, nontoxic diffuse goiter and etc; were the most common underlying conditions. Recovering of COVID-19 patients with arterial hypertension (55%) who were not treated with angiotensin-converting enzyme inhibitors and angiotensin-AT1 receptor blockers required fewer hospitalization days to recover (approximately 2-3 days or 62 hours less) in comparing to patients which were treated using the above mentioned medications.

Keywords

COVID-19 infection; Mortality rate; Comorbid diseases; Angiotensin converting enzyme inhibitors; Angiotensin 1 receptor blockers

INTRODUCTION

As is already known, the World Health Organization declared the outbreak of COVID-19 as a Public Health Emergency of International Concern at 30 of January 2020, and a pandemic at 11 of March [1,2]. Daily reports are showing, that new cases are significantly rising around the world. Lack of knowledge about the basic aspects of SARS-CoV-2 infection – biology of pathogen, immunological response and treatment options are inhibiting the slowing down of pandemic. Currently, when is the absence of vaccination, the lack of medical and specific treatment methods, preventive defensive measures against COVID-19 remains as most effective [3-5]. Nowadays, as it is known, COVID-19 affected 215 countries and territories around the world and 2 international conveyances. The list of countries and territories and their continental regional classification is based on the United Nations

Geo Scheme [6]. Georgia has the following data (22.07.2020) according to pandemic of COVID 19: 1073 total cases, among which 907 patients had been recovered, while 16 others died and 150 patients are treating in several hospitals. The aim of this paper is to analyze the several data types of COVID-19 patients, which were treated at the First University Clinic of Tbilisi State Medical University (TSMU), Georgia.

MATERIALS AND METHODS

First University Clinic of TSMU was one of the important core of the fight against COVID-19 infection in Georgian republic. Totally 160 patients were admitted at the TSMU clinic which were affected with COVID-19 disease, during the period of March-June 2020. Diagnosis of patients were performed by widely used specific clinical and laboratory methods. We conducted retrospective study

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of 160 cases according to gender and age of patients, lethal outcome rate, hospitalization days and frequency of different comorbid diseases (descriptive study). Also, in terms of hospitalization duration, observations were carried out on patients, taking ACE (angiotensin converting enzyme) inhibitors and angiotensin-AT1 receptor blockers due to heart failure or arterial hypertension. The obtained data was processed statistically with the use of statistical program -IBM SPSS Statistics for Windows, Version 19.0. Statistically significant difference for all tables and diagrams is $P < 0.05$.

RESULTS

Study results revealed that 9 patients (5.6%) had lethal outcome (LO). Age group distribution among LO: 8 patients were in the age above 60 year (88.8%) -E group and 1 patient (12.2%) in the age of 30-59 years -D Group [Figure 1]. Gender distribution among LO was as follows: Females -4 patients (44.4%), Males -5 patients (55.6%), where we observed no significant difference [Figure 2]. Comorbid diseases: all LO patients except one - aged 65, had at least one or more comorbid diseases, like heart failure, acute kidney injury, acute thrombosis of pulmonary artery, multi organ failure, sepsis, atrial flutter and fibrillation, essential arterial hypertension III, mitral valve defect, nontoxic diffuse goiter and etc [Figure 3]. COVID -19 patients ended with LO averagely at the day 17-21 after hospital admission. However one of them died at the second day of admission, and longest period of treatment of patient with LO was 70 days [Figure 4]. As mentioned, 160 COVID -19 patients were admitted at the TSMU Clinic among which 9 ended LO. From others, 1 patient transferred to another COVID -19 clinic and 150 patients completed the treatment at the TSMU clinic until recovery and consequently there were 150 convalescent patients

(CP). Average hospitalization days of CP patients were 21 days, starting from 11 till 51 days [Figure 5].

Analyzing age of the convalescent patients was also one of our targets, that showed, highest prevalence 45.3% in D group (30-59y.), descending order - E group (26%) and C group (17.3%) [Tables 1,2; Figure 6]. Gender distribution among CP was as follows: [Table 3, Figure 7]. Among the convalescent patients 57.3% were female (n=86). Meanwhile, 46.5% of them (n=40) were at the age of 30-59 years (D group), that is the most prevalent age group, with descending order - E group (n=21, 14%), C group (n=18, 12%). [Table 4, Figure 8]. Average duration of hospitalization is 20 days for female CP, starting from 14 till 50 days [Figure 9]. 42.7% of convalescent patients were male (64 patients). Whereas, 43.7% of them (28 patients) were in the age between 30-59 (D group), that is most prevalent age group, with descending order E group -18 patients (12%) and C group 8 patients (5.3%) [Table 5; Figure 10].

The number of hospitalization days among the male patients started from 11 till 51 and was averagely 21.7 days that was a bit high rather than in female patients (20 days), but difference was not statistically significant. [Figure 11]. Arterial hypertension was the most common comorbidity among the CP: 55% of them had this disease. [Figure 12]. Among convalescent patients with comorbidity 12% were taking either ACE (angiotensin converting enzyme) inhibitors and/or AT1 (angiotensin 1) blockers [Figure 13]. The observation showed that duration of hospitalization was different among those who were taking or not taking above mentioned medications. For those patients, which were taking no ACE and/or AT1 blockers hospitalization period was less for 62 hours (appr.2.5 days). Possible explanation of this phenomenon is the known fact that in hypertensive patients ACE and AT1 receptors expression is

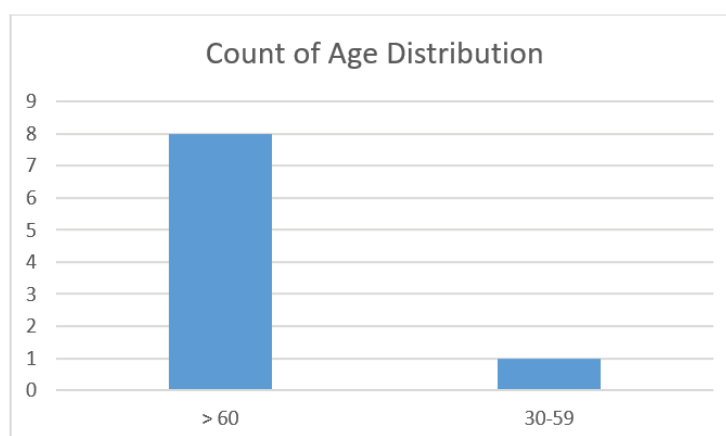


Figure 1: Age distribution among LO patients.

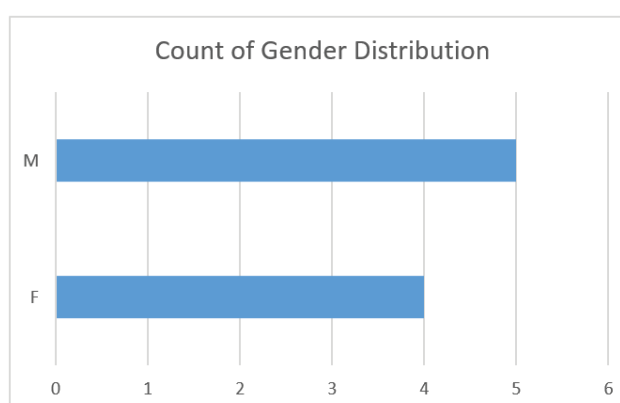


Figure 2: Gender distribution among LO patients (M- Male, F- Female).

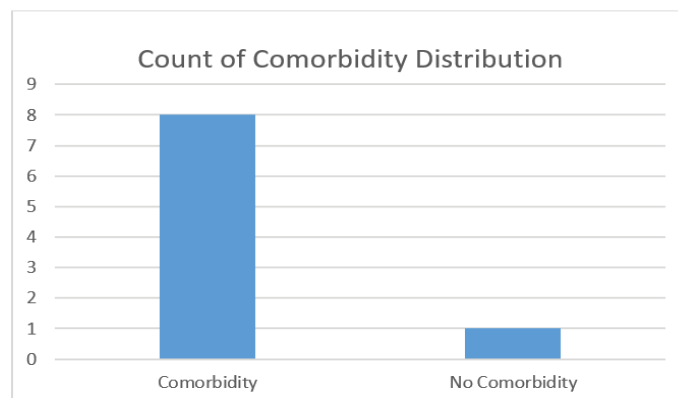


Figure 3: Comorbidity distribution among LO patients.

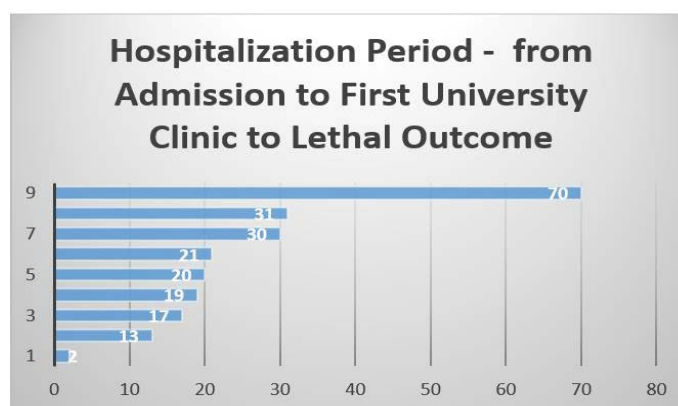


Figure 4: Hospitalization period in LO patients.

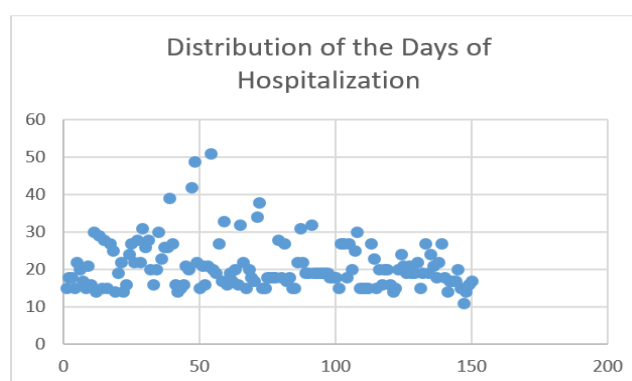


Figure 5: Period of hospitalization in convalescent patients (days).

Table 1: Patients were divided into different age groups.

5-14	A
15-19	B
20-29	C
30-59	D
60 >	E

Table 2: Age distribution among convalescent patients.

Age Groups (CP)	Age Group	Count of Age Distribution among CP	Count of Age Distribution among CP (%)
A	5-14	5	3.30%
B	15-19	12	8%
C	20-29	26	17.30%
D	30-59	68	45.30%
E	60 >	39	26%
Total		150	100%

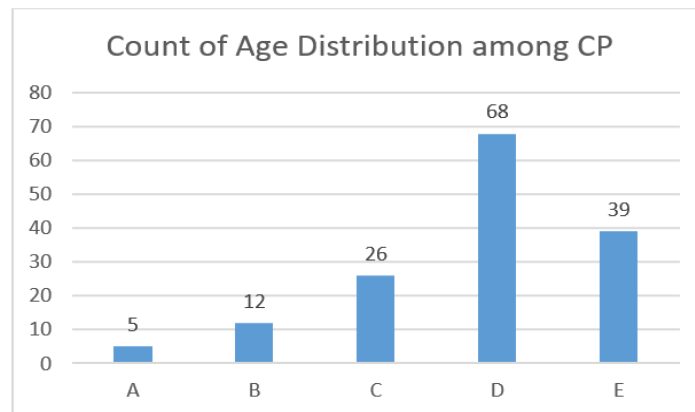


Figure 6: Age distribution among convalescent patients (according to groups A, B, C, D, E).

Table 3: Gender distribution among CP.

Gender Distribution among Convalescent Patients (CP)	Count of Gender Distribution among Convalescent Patients (CP)
F	86
M	64

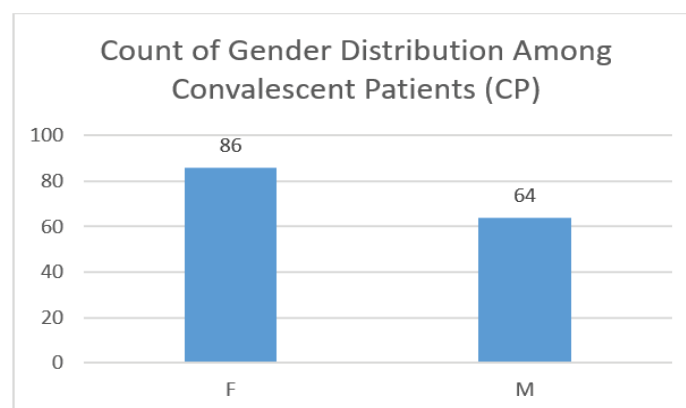


Figure 7: Gender distribution among CP.

Table 4: Age distribution among female convalescent patients.

Age group	Count of Age group among Female
A	1
B	6
C	18
D	40
E	21

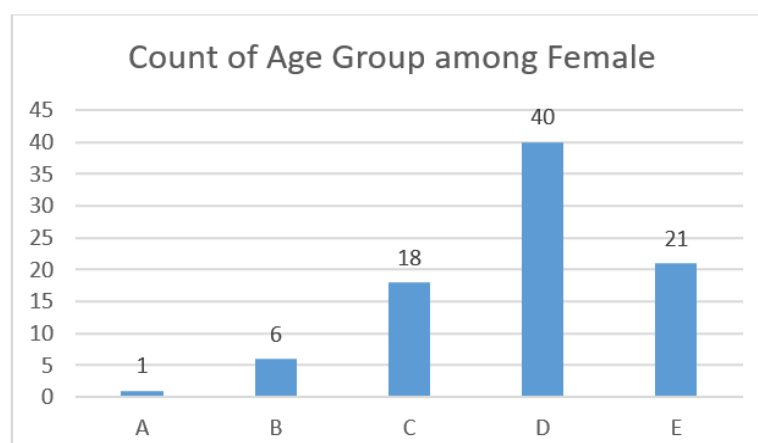


Figure 8: Age distribution among female convalescent patients.

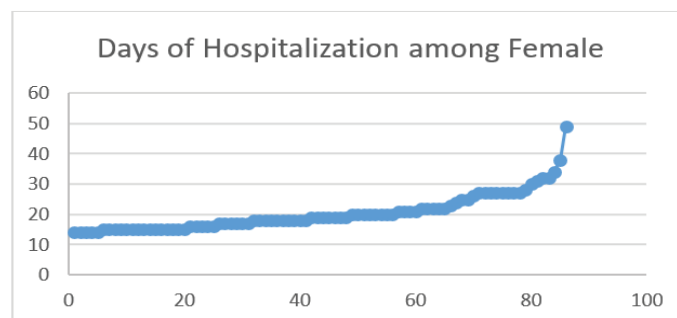


Figure 9: Duration of hospitalization among female convalescent patients.

Table 5: Age distribution among male convalescent patients.

Age Group among Male	Count of Age Group among Male
A	4
B	6
C	8
D	28
E	18

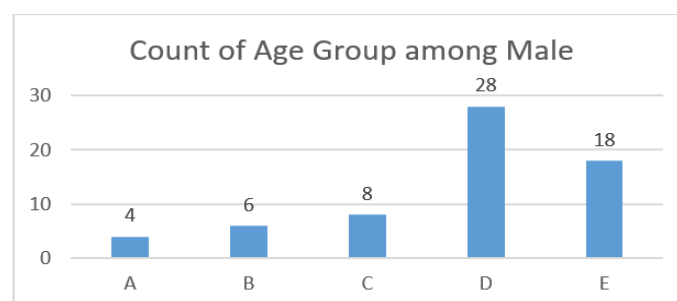


Figure10: Age Distribution among male convalescent patients.

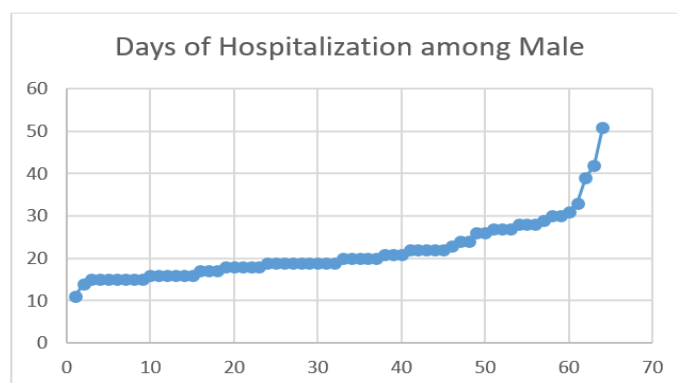


Figure11: Days of hospitalization among male convalescent patients.

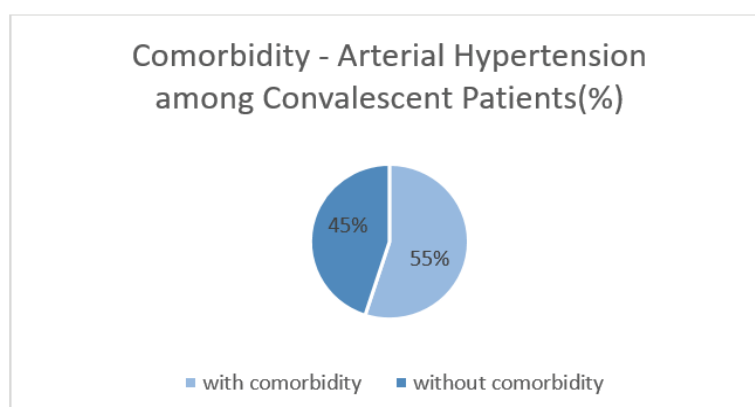


Figure12: Prevalence of comorbidity among Convalescent Patients (CP).

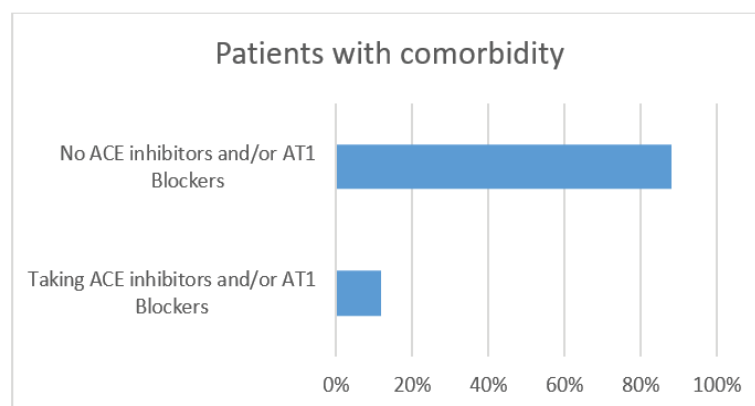


Figure13: Percentage (%) of comorbid CP taking ACE and/or AT1 blockers.

high and they are in increased risk of severe COVID -19 infection [2]. Hydroxychloroquine in combination with azithromycin was used for the treatment of COVID-19 infected patient at the First University Clinic of TSMU. Exception were 3 patients with arrhythmias due to conduction disorders in myocardium, who were not administered to the above mentioned treatment due to contradiction of accepted guidelines. As our clinical experience has shown, the virus was rapidly eliminated following the treatment. With the using of above mentioned combination the same results confirmed also by the other authors according to international data and experience [4,5].

CONCLUSION

- According to patients' gender, frequency between female and male was not significantly different (44.4% vs. 55.6%);
- Frequency of infected patients was the highest among the patients with 30-59 years of ages (45.3%);
- Average hospitalization days of convalescent patients were 21, and maximum was 51 days;
- Mortality rate was 5.6%, mostly in age above 60 (88.8%), averagely at the 17-21th day;
- Almost all LO patients had the comorbid diseases (88.8%) such as heart failure, acute kidney injury, sepsis, essential arterial hypertension III, mitral valve defect, nontoxic diffuse goiter and etc;
- There was observed slight difference in convalescent patients' hospitalization duration, according to gender: male hospitalization was insignificantly higher (21.7 days vs 20 days);
- 55% of convalescent patients had comorbid disease – arterial hypertension, those who took no ACE inhibitors or AT 1 receptor blockers, required less hospitalization days, approximately 2-3 days (62 hours).

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