

COVID-19 in patients with cardiac disease: impact and variables associated with mortality

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INTRODUCTION

COVID-19 has been a global pandemic since early 2020. Cardiovascular disease is an independent predictor of severe COVID-19, and cardiac complications of COVID-19 are frequent. Our aim was to describe the demographic, clinical and laboratory features (including electrocardiographic and echocardiographic ones) and outcomes of patients with cardiac disease hospitalized with COVID-19 in a reference cardiology institution in Brazil.

METHODS

This is an observational retrospective study of consecutive adult patients admitted between March and September of 2020 with a diagnosis of SARS-CoV-2 infection confirmed by RT-PCR. Data was collected as per the International Severe Acute Respiratory and Emerging Infection Consortium and complemented with clinical and laboratory variables related to cardiovascular illness. Data were analyzed using Jamovi 1.6 e R 4.0.1 statistical software.

RESULTS

One hundred twenty-one patients with a confirmed diagnosis of COVID-19 were included. Mean age \pm standard deviation was 60 ± 15.2 years and male gender corresponded to 80/121 (66.1%).

Two-thirds of the patients (80/121, 66.1%) were suspected of infection by SARS-CoV-2 at the time of hospital admission. Most (69, 57%) acquired the disease in the community; 20 patients (16.5%) were infected at our center, while 31 (25.6%) were transferred from other hospitals with the infection.

COVID-19 was the reason for hospital admission in 42 (34.7%), and 96/114 (84.2%) had symptoms related to the infection. Other frequent reasons for hospital admission were acute coronary syndrome (26%) and decompensated heart failure (14.8%).

Chronic cardiac diseases were found in 106/121 (87.6%), mostly coronary artery disease (62%) or valve disease (33.9%). Comorbidities are shown in Figure 1.

A transthoracic echocardiogram was performed in 85% of the patients (93/121, 76.8%). Enlarged cardiac chambers were found in 71% (66/93).

Admission ECG was done in 90 cases (90/121, 74.3%), and 86.7% (78/90) were abnormal.

On bivariate analysis for mortality, BNP levels and troponin levels were NOT associated with mortality. Laboratory features associated with mortality are shown in Table 1.

On multivariate analysis, only C reactive protein levels and creatinine levels were significant.

Variables	Alive	Dead	OR (95% CI)	P value
Leukocyte count (cells/ μ l)	6740 (5120-8993)	8530 (6610-11010)	1.0 (1.0-1.0)	0.037
Lymphocyte count (cells/ μ l)	1451 (1029-1999)	720 (570-1940)	0.9 (0.9-1.0)	0.008
Glucose (mg/dl)	110 (94.5-147)	157 (117-207)	1.0 (1.0-1.0)	0.008
AST (IU)	26.5 (19.8-44.3)	52 (41-79)	1.0 (0.0-1.0)	0.001
Creatinine (mg/dl)	1.04 (0.8-1.39)	1.46 (1.05-2.25)	1.4 (1.0-2.0)	<0.001
CRP levels (mg/dl)	3.4 (1.2-9.2)	17 (7-31)	1.0 (1.0-1.1)	<0.001
Ferritin levels (μ g/l), n=54	585 (197-1066)	1488 (654-2106)	1.0 (1.0-1.0)	0.007
D-dimer (ng/ml), n=62	1130 (498-1893)	1545 (785-3945)	1.0 (1.0-1.0)	NS
BNP (pg/ml), n=28	1298 \pm 1069	1332 \pm 635	1.0 (0.9-1.0)	NS
Troponin* (n=85)	46/59 (78%)	16/26 (61.5%)	0.452 (0.166-1.23)	NS
Echocardiogram (n=93)				
Pulmonary hypertension	6 (9.2%)	11 (40.7%)	6.7 (2.1-21.1)	<0.001
Enlarged cardiac chambers	43 (66.2%)	22 (81.5%)	2.2 (0.7-6.7)	0.2092
Left ventricular systolic dysfunction	32 (49.2%)	18 (66.7%)	2.0 (0.8-5.2)	0.126
Right ventricular dysfunction	9 (13.8%)	10 (37.0%)	3.6 (1.2-10.5)	0.012
Heart valve abnormalities	35 (53.8%)	14 (51.9%)	0.9 (0.3-2.2)	0.861
Left ventricular hypertrophy	28 (43.1%)	14 (51.9%)	1.4 (0.5-3.5)	0.442
Pericardial effusion	9 (13.8%)	2 (7.4%)	0.4 (0.1-2.4)	0.386
Electrocardiogram (n=93)				
Any abnormality of cardiac rhythm	18 (26.5%)	14 (56%)	3.5 (1.3-9.2)	<0.008
Atrial fibrillation	8 (11.8%)	5 (20%)	1.8 (0.5-6.3)	0.310
Bundle branch block	14 (15.2%)	5 (17.2%)	1.1 (0.3-3.5)	0.775
ST segment abnormalities	15 (22.1%)	5 (20%)	0.8 (0.2-2.7)	1.000
QT interval abnormalities	4 (5.9%)	2 (8.0%)	1.3 (0.2-8.1)	0.658

Table 1. Laboratory features associated with mortality in 121 hospitalized patients with cardiac disease and COVID-19.

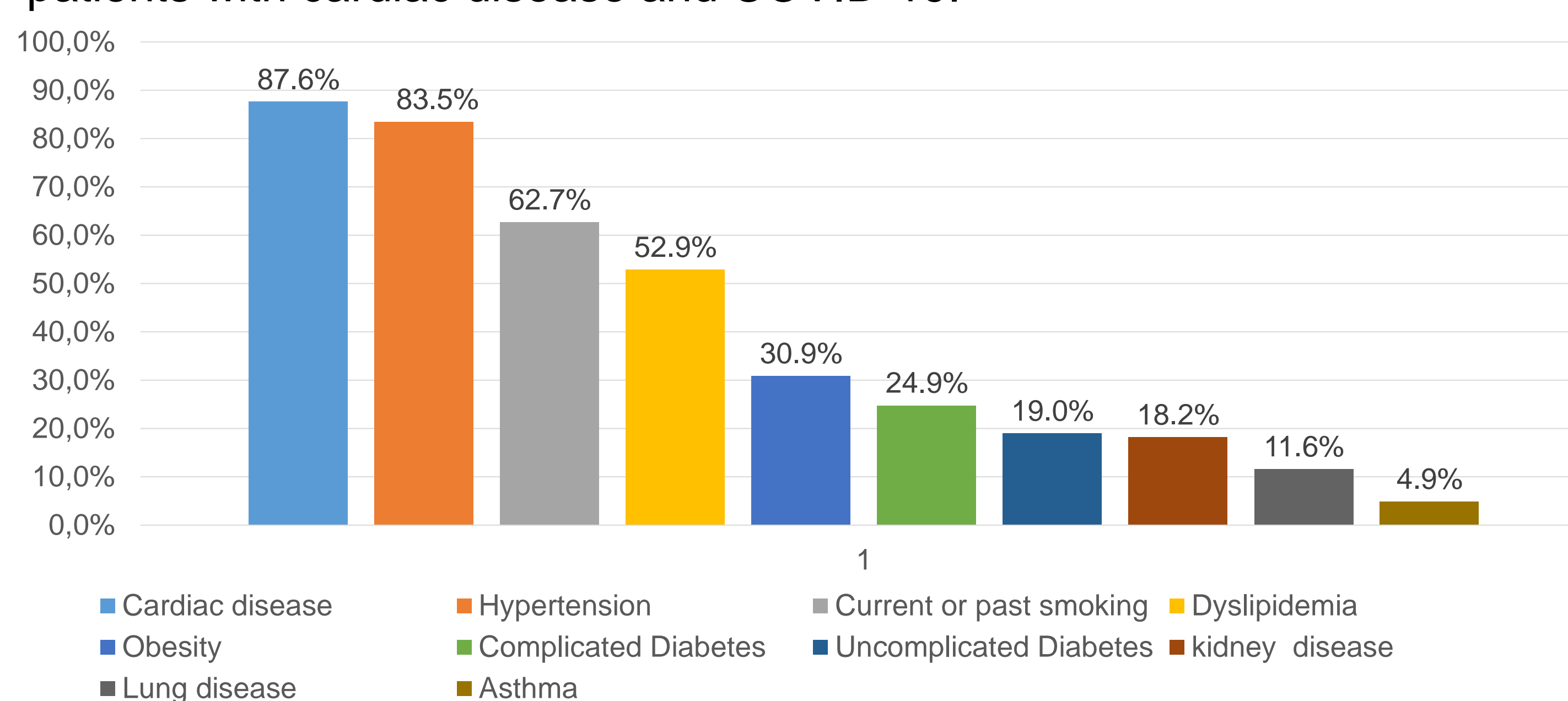


Figure 1. Most frequent comorbidities in 121 cardiac patients hospitalized with COVID-19. INC, March-September 2021.

CONCLUSIONS

Nearly a fifth of hospitalized patients acquired COVID-19 while being cared for other cardiac conditions. Mortality was high but similar to other series of hospitalized patients with COVID-19. BNP and troponin levels were not associated with mortality and may not be good prognostic discriminators in cardiac patients.

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