Frequency and outcome of acute coronary syndrome during the Covid-19 pandemic

R.A. Mousavi[1], C. Wallmueller[2], P. Stratil[1], G. Pichler[1], F. Piringer[1], G. Delle Karth[1], A. Schober[1]

[1]*Karl Landsteiner Institute for Cardiovascular and Critical Care Research, Vienna, Austria;* [2]*Floridsdorf Clinic, Department of Cardiology, Vienna, Austria*

Funding Acknowledgement: Type of funding sources: None.

Introduction: In 2020 the Austrian government has ordered two complete lockdowns and two lockdown lights to maintain control over the infection rate of Covid-19. Several studies have analysed the frequency and outcome of patients with acute coronary syndrome (ACS) during the pandemic. Some have described a decrease in the admission rate of patients with ST-elevated-myocardial-infarction (STEMI) and no-ST-elevated-myocardial-infarction (NSTEMI), with the reasons still being discussed.

Purpose: The aim of this study is to analyse possible differences in frequency, comorbidities and outcome of all STEMI and NSTEMI admissions over various lockdown (L) periods in Austria and to provide a possible explanation for the results.

Methods: Analysis of prospectively gathered data on ACS patients in our heart center in the year 2020. Patients were split into 4 groups: no lockdown (NL): n=136; duration (dur): 36 weeks (w); lockdown 1 (L1): n=24; dur: 7w; lockdown 2 (L2): n=16; dur: 2.5w; lockdown light (LL): n=22; dur: 5.5w. To account for the different durations, we divided patients by lockdown duration (n/w). End of a L was defined as re-opening of shops; in LL period schools and restaurants were closed but shops were open. To compare the different groups, age, sex, BMI, comorbidities, cardiovascular risk factors (CVRF) duration of preclinical-symptomatic phase (onset of chest pain to PCI), blood parameters, indication, vascular access (femoral/radial) and target vessel were recorded. As outcome we defined CPR, shock and in hospital death.

Results: Out of 198 patients 126 were male (63.6%) and 72 female (36.4%), with a mean age of 65±12 years. There were no statistically significant differences in age, BMI or CVRF between the 4 groups. A 50% higher number of diabetics in the LL group as compared to 25.3% in the NL group (p=0.005) was noticed. STEMI admissions from 2.2 patients/week (n/w) without L decreased to 1.4/w during L1. During L2, the frequency rate rose to 3.2/w in the LL group and admission rates to 2/w, which is almost as high as in the NL group. No differences in NSTEMI admissions between the NL (1.3/w), the L1 (1.4/w) and the LL group (1.8/w) were found. During L2 the frequency of NSTEMI patients increased to 3.2/w. We found a rise in in-hospital death rates from 4.4% without L to 9.1% during LL, though with boarder line statistical significance (p=0.05).

Conclusion: Compared to the NL group, our data show a decrease of STEMI and NSTEMI admissions during L1. This trend was not confirmed during L2, despite identical government's restrictions. We, thus, postulate that the decrease of ACS admissions in L1 was caused by patients' concern regarding in-hospital Covid-19 infection rather than by actual restrictions.

Table 1

	All	no LD	LD 1	LD 2	LD light
Number of admission *(n)*	198 (100%)	136 (68,7%)	24 (12,1%)	16 (8,1%)	22 (11,1%)
Female gender	72 (36,4%)	48 (35,3%)	7 (29,2%)	7 (43,8%)	10 (45,5%)
Age *(mean years ± SD)*	64,7 (±12,2)	65,4 (±12,2)	62,5 (±11,8)	63,7 (± 11,2)	63,3 (±13,5)
Weight *(mean kg ± SD)*	83,8 (±16,4)	82,5 (±17,2)	90,8 (±17,0)	79,5 (±15,6)	84,4 (±9,7)
Cardiovascular risk factors					
Smoker	122 (61,6%)	84 (61,8%)	19 (79,2%)	9 (56,3%)	10 (45,5%)
Diabetes mellitus	50 (25,3%)	29 (21,3%)	7 (29,1%)	3 (18.3%)	11 (50%)
Prior stroke/TIA	10 (5,1%)	7 (5,1%)	1 (4,2%)	0 (0%)	2 (9,1%)
Atrial fibrillation	13 (6,6%)	11 (8,1%)	2 (8,3%)	0 (0%)	0 (0%)
Prior PTCA	57 (28,8%)	34 (25%)	8 (33,3%)	5 (31,3%)	10 (45,5%)
Prior MCI	43 (21,7%)	25 (18,4%)	7 (29,2%)	4 (25%)	7 (31,8%)
EKG					
Anterior STEMI	56 (28,3%)	35 (25,7%)	8 (33,3%)	4 (25%)	9 (40,9%)
Posterior STEMI	55 (27,8%)	44 (32,4%)	6 (25,5%)	3 (18,8%)	2 (9,1%)
NSTEMI	75 (37,9%)	47 (34,6%)	10 (41,7%)	8 (50%)	10 (45,5%)
Target vessel					
LAD	85 (42,9%)	54 (39,7%)	12 (50%)	9 (56,3%)	10 (45,5%)
CX	29 (14,6%)	18 (13,2%)	3 (12,5%)	3 (18,8%)	5 (22,7%)
RCA	62 (31,3%)	50 (36,8%)	7 (29,2%)	1 (6,3%)	4 (18,2%)
Left main	7 (3,5%)	5 (3,7%)	1 (4,2%)	0 (0%)	1 (4,5%)
Outcome parameters					
CPR	12 (6,1%)	8 (5,9%)	2 (8,3%)	1 (6,3%)	1 (4,5%)
Shock	16 (8,1%)	10 (7,4%)	2 (8,3%)	2 (12,5%)	2 (9,1%)
Death	9 (4,5%)	6 (4,4%)	0 (0%)	1 (6,3%)	2 (9,1%)

PTCA=percutaneous transluminal coronary angioplasty, MI=myocardial infarction, LAD=left anterior descending, CX=left circumflex artery, RCA=right coronary artery, CPR=cardiopulmonary resuscitation