Design and method: According to the regulations of the National Healthcare Fund in Bulgaria, all patients with cardiovascular diseases must have an annual examination by a cardiologist. We studied the real–life data from one outpatient cardiology practice in Sofia, Bulgaria. 634 patients had to be checked in 2021, 15 of these patients had died with Covid 19 infection, one with myocardial infarction and one with stroke.

Results: Only 243 patients attended the annual cardiovascular examination. 172 of them were with worsened control of blood pressure, 48 with new symptoms of heart failure, 16 with newly found atrial fibrillation and 13 with newly diagnosed diabetes mellitus. In just one day the cardiologist met a patient with new decompenated diabetes patient with new ECG data for myocardial infarct, patient with atrial fibrillation and patient with severe collapses and ventricular tachycardia on ECG Holter! Many patients had antiplatelet and anticoagulant treatment prescribed after Covid 19 infection, but also had uncontrolled hypertension and that increases the risk of hemorrhagic stroke

Conclusions: Covid 19 infection, as an endothelial disease, has a devastating impact on patients with cardiovascular, cerebrovascular, pulmonary and metabolic disorders. The absence of team approach to the therapy leads to very high rate of mortality and long term consequences. The outpatient care of cardiovascular diseases is strongly damaged in Bulgaria. That results in bad control of arterial hypertension, delayed hospitalizations for acute coronary syndromes and heart failure, uncertain control of anticoagulation. It is time to recover healthcare system!

IMPAIRED BETA-2ADRENERGIC ENDOTHELium-DEPENDENT VASODILATATION IS REVERSED BY PHOSPHODIESTERASE INHIBITION IN PATIENTS PREVIOUSLY HOSPITALIZED WITH COVID-19

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Objective: Endothelial dysfunction is thought to underlie many of the complications of COVID-19 but to what degree this persists after hospital discharge is unknown. Here we examine endothelial function in subjects previously hospitalized with COVID-19, those with mild symptoms who were not hospitalized and negative controls (absence of SARS-CoV-2-antibodies). Endothelial function was measured as pulse wave velocity response to the β2 adrenergic agonist salbutamol (PWRS) which is mediated through the nitric oxide - cyclic guanosine monophosphate pathway (NO-cGMP).

Design and method: Echocardiography was used to exclude subjects with cardiac abnormalities. Tonometry of the radial artery (SphygmoCor, AtCor Medical, Sydney, Australia) was performed in duplicate by a single operator before and after inhalation of 200 mcg of salbutamol using a spacer device. The PWRS was taken as the change from baseline in augmentation index (Aix) as calculated by the SphygmoCor system. In a sub-sample, PWRS was assessed in the presence and absence of the phosphodiesterase type 5 inhibitor sildenafil which inhibits the breakdown of cGMP.

Results: We recruited 88 subjects (49 men) aged 47.9±14.3 (mean±SD) years of whom 32 were previously hospitalized with COVID-19 (>6 months). Subjects previously hospitalized with COVID-19 were all previously assessed in a dedicated pulmonary clinic. Age, gender, BMI, smoking status, diabetes and estimated 10-year cardiovascular risk (Q-RISK3) were similar between the groups. Administration of salbutamol reduced Aix in controls and those with mild COVID-19 but produced an increase in Aix in previously hospitalized COVID-19 cases (mean [95% CI]: -2.85 [-5.52, -0.18] %, -2.32 [-5.17,0.54] %, and 3.03 [0.06, 6.00] % respectively, P  0.017 between the groups. In a sub-sample (11 hospitalized and 11 non-hospitalized) the PWRS was measured 30 minutes after oral administration of sildenafil 25 mg. This produced a greater reduction in Aix: -5.28 [-9.00, -1.54] % in non-hospitalized and a reduction: -3.90 [-7.60, -0.21] % in hospitalized patients, and an overall improvement in the PWRS (P  0.006).

Conclusions: In subjects previously hospitalized with severe COVID-19, endothelial function is impaired for many months after hospital discharge and the impaired NO-cGMP mediated vasodilation may be reversed by sildenafil.

CONTINUOUS REMOTE PATIENT MONITORING SHOWS EARLY CARDIOVASCULAR CHANGES IN COVID-19 PATIENTS

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Objective: COVID-19 exerts deleterious cardiopulmonary effects, leading to a worse prognosis in the most affected. This study aimed to analyze the trajectories of key vital among hospitalized COVID-19 patients using a chest-patch wearable medical-grade monitor providing continuous remote patient monitoring of numerous vital signs.

Design and method: This retrospective multicenter observational cohort study was conducted in five COVID-19 isolation units. 492 COVID-19 patients were included in the final analysis. Physiological parameters were measured every 15 minutes.

Results: More than 3 million measurements were collected including heart rate, systolic and diastolic blood pressure, cardiac output, cardiac index, systemic vascular resistance, respiratory rate, blood oxygen saturation, and body temperature. Cardiovascular deterioration appeared early after admission and in parallel with changes in the respiratory parameters, showing a significant difference in trajectories within sub-populations at high risk.

Conclusions: Early detection of cardiovascular deterioration of COVID-19 patients is achievable when using frequent remote patient monitoring.

CARDIOVASCULAR RISK SCORE MAY BE USEFUL IN STRATIFY DEATH RISK IN HOSPITALIZED COVID-19 PATIENTS

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Objective: COVID–19 induce a robust systemic inflammation. Patients with cardiovascular disease (CVD) present an increased death risk. Many efforts are spent to identify possible predictors of negative outcomes. CVD score are useful tools in evaluation of risk of cardiovascular events Ann: We evaluated oxygenation and characteristics in COVID–19 according to cardiovascular risk stratification performed using Framingham (FRS) and Atherosclerotic cardiovascular disease (ASCVD) risk scores.

Design and method: We evaluated retrospectively 155 COVID–19 patients (110 males, aged 67.43±14.72 yrs). All patients underwent to a complete physical examination, chest imaging, laboratory tests, and blood gas analysis at the time of diagnosis. Seventeen patients died (10 males and 7 females, aged 74.71±7.23 yrs) while the remaining 138 patients (100 males, aged 66.07±15.16 yrs) were alive at discharge.

Results: No differences there were in Hb, C–reactive protein nor in d–dimers between the two groups. Compared to alive, died group presents a significant increase in white blood cells (p < 0.05) and d–dimers (p < 0.05). No difference there were in pCO2, SO2, and in alveolar arteriolar oxygen difference (A–aDO2). On the contrary, in died patients there is an increased pO2 (p < 0.05) and a decreased ratio between oxygen inspired and pO2 (P<0.05) in died while no correlation was found in alive. No other correlation has been found with blood gas parameters or in the phlogosis parameters evaluated in the two groups. ROC curve analysis showed a good performance in prediction of death for both scores (AUC FRS 0.71, ASCVD 0.77) with a good sensitivity (FRS 76.92%, ASCVD 75.00%) and specificity (FRS 65.00%, ASCVD 81.13%).

Conclusions: CVD is a major risk factor for death in COVID–19 patients. The increase risk relates to a reduced lung capacity but it is not related to alteration in gas exchange. CV risk results independent from inflammatory state we found. CVD risk score may be useful to stratify patients at admittance for a better treatment.