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HOW COVID-19 AFFECTED THE CONTROL OF HYPERTENSION AND COMORBIDITIES IN ONE CARDIOLOGICAL OUTPATIENT PRACTICE IN BULGARIA?

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КАК COVID-19 СЕ ОТРАЗИ НА КОНТРОЛА НА ХИПЕРТОНИЯТА И КОМОРБИДНОСТИТЕ В ЕДНА АМБУЛАТОРНА КАРДИОЛОГИЧНА ПРАКТИКА В БЪЛГАРИЯ?

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Abstract. COVID-19 pandemic affected directly and indirectly the healthcare system in Bulgaria in a very negative manner. The hospitals were flooded with COVID cases and patients were afraid to attend even the outpatient clinics. That resulted in increased mortality and poor control of cardiovascular diseases. We studied the results from the mandatory annual examinations of hypertensive patients in one cardiological outpatient practice in Sofia, Bulgaria in 2021 and 2022. The results showed low level of attendance by the patients in 2021 and poor control of hypertension and comorbidities, that continued even in the post-covid year – 2022.

Key words: COVID-19, hypertension, comorbidities, outpatient care, vaccination

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Резюме: COVID-19 оказва силен негативен ефект върху системата на здравеопазване в България. Болниците бяха залети с тежки случаи на инфекцията, а в доболничната помощ пациентите се страхуваха да посещават лекарските кабинети. Това доведе до нарастваща обща смъртност и влошен контрол на сърдечно-съдовите заболявания. Проучихме резултатите от годишните прегледи при кардиолог на пациентите с хипертония в една амбулаторна практика в София през 2021 и 2022 г. Резултатите показват силно редуциран брой на посещенията от пациентите през 2021 г и лош контрол на хипертонията и коморбидностите, продължаващ и през постковидната 2022 г.

Ключови думи: COVID-19, хипертония, коморбидности, амбулаторна кардиологична практика, ваксинация

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INTRODUCTION

In 2020 and 2021 COVID-19 has turned into a deadly pandemic, but it also had a devastating effect on non-infectious chronic diseases, particularly on cardiovascular. This situation was described by Prof. Hector Bueno as "sindemic" [1-3]. SARS Covid-2 – related respiratory syndrome has a direct and strong biological, pathophysiological and social interaction with cardiovascular system [4-7].

Another serious problem was the admission to hospital because, many of cardiological units and ICUs were transformed into COVID-19 wards [8-11].

That is why the outpatient treatment of cardiovascular diseases and risk factors and comorbidities became even more important. Unfortunately, the tools of telemedicine were not widely available and used., especially in middle- and low-income countries [12].

In the beginning, the panic and lack of clear therapeutic algorithms for COVID-19 patients, resulted in discontinuation of essential antihypertensive medications such as ACE- inhibitors. Later the protective role of RAAS inhibition and statin therapy had been re-established [13].

Another potential risk for cardiovascular patients was the potential prolongation of QT interval by the medications, used for initial treatment of COVID-19 infection [14].

The ESC promptly created specific guidelines for diagnosis and management of CV diseases during the COVID-19 pandemic, but in every day practice many aspects of cardiovascular care were substandard [15].

In Bulgaria cardiovascular diseases traditionally are the main cause of death, but in 2020 COVID 19 contributed significantly to the negative statistic. (Fig 1) [16-24]. We must admit that low vaccination rate was one of the reasons for these unpleasant results [25]. Another proven risk factor for Covid -19 mortality was the air pollution, which is very prominent in the urban areas of Bulgaria [26].

But even more worrying, was the number of excess deaths, mainly due to lack of adequate cardiovascular health care during the pandemic (Fig. 2).

MATERIAL AND METHODS

According to the regulations of the National Health-care Fund in Bulgaria, patients with hypertension must be send by the general practitioner to an annual consultation with cardiologist. The examination includes physical examination, BP measuring and ECG. Echocardiography is mandatory every second year.

We studied the real-life data for these examinations in one outpatient cardiological practice in the city center of Sofia, Bulgaria. The population of this are consists of predominantly elderly people – over 65 years of age, who usually strictly follow the recommendations for the annual cardiological consultation.

RESULTS

Compared to the data from the previous year / (2020), 634 hypertensive patients were expected to be examined in 2021, but only 243 of them attended the annual cardiological examination – 102 men and 141 women.

172 (71%) were with worsened control of blood pressure, 48 (20%) with new symptoms of heart failure, 16 (7%) with newly found atrial fibrillation and 13 (5%) with newly diagnosed diabetes mellitus. We found out in the registry that 15 of these patients had died of COVID-19 infection, one of myocardial infarction and one of stroke (Table 1).

In just one day the cardiologist in this practice met a patient with newly found decompensated diabetes, a patient with new ECG data for myocardial cicatrix, a patient with atrial fibrillation (Fig. 3) and a patient with several collapses and ventricular tachycardia on the ECG Holter!



Fig. 1. Mortality in Bulgaria in 2020 [16] (OECD/European Observatory on Health Systems and Policies (2021), Bulgaria: Country Health Profile 2021, State of Health in the EU, OECD Publishing, Paris, <https://doi.org/10.1787/c1a721b0-en>).

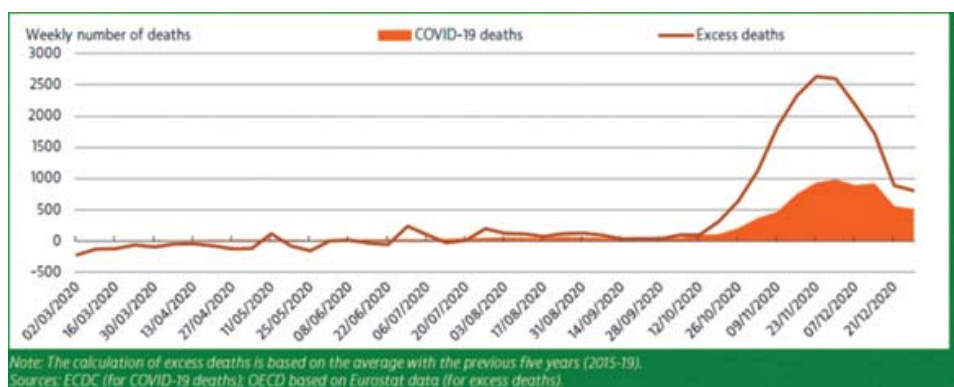


Fig. 2. excess of death in Bulgaria [16] (OECD/European Observatory on Health Systems and Policies, Bulgaria: Country Health Profile 2021, State of Health in the EU, OECD Publishing, Paris, 2021, <https://doi.org/10.1787/c1a721b0-en>).

Table 1. Number of patients with worsened control of hypertension and comorbidities

Worsened control of blood pressure	New symptoms of heart failure	New atrial fibrillation	New diagnosis of diabetes mellitus
172 pts. – 71%	48 pts. – 20%	16 pts. – 7%	13 pts. – 5%

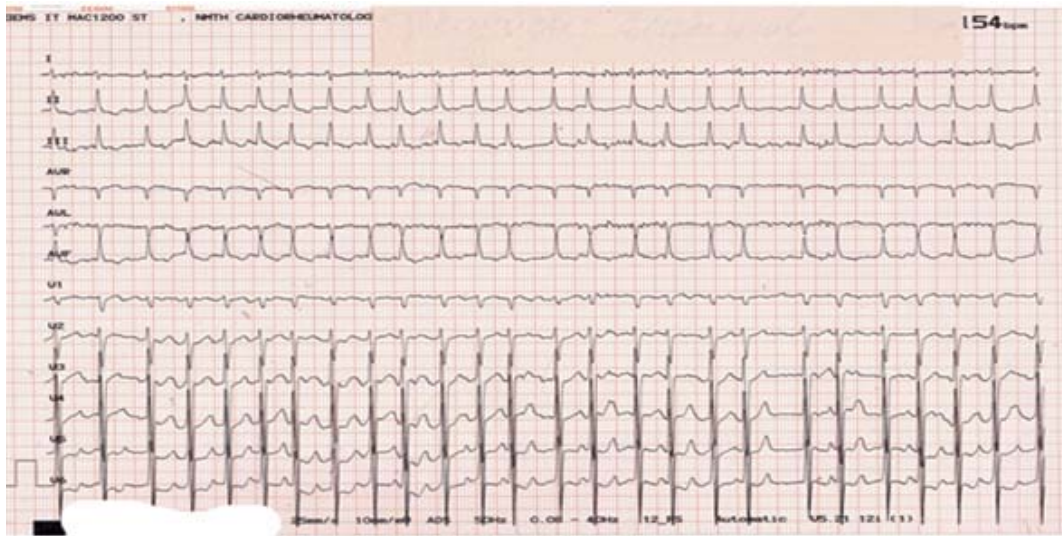


Fig. 3. ECG of a patient with new onset of AF

Many patients had antiplatelet and anticoagulant treatment prescribed after COVID-19 infection (often without clear medical indications), but also had uncontrolled hypertension and that increases the risk of bleeding including intracranial. On the other hand, the temporary or permanent interruption of the essential therapy for cardiovascular diseases was not a rare case.

In 2022 we decided to revisit the data from the same outpatient practice and see what happened after the pandemic.

The patients had returned to the clinical visits. They did not postpone their examinations anymore. In 2022 712 routine examinations of hypertensive patients were done (Fig. 4) 498 – 70% of them had passed through COVID-19 infection at least once and 75% of the patients over 65 were vaccinated.

The post-COVID symptoms were usual finding in 2022. Table 2 represents the main complaints among the COVID-survivors.

Table 2

Signs and Symptoms	% of the COVID-survivors
Long lasting unclear fatigue with preserved left-ventricular (LV) ejection fraction (EF) and no substantial pulmonary changes	68%
Newly diagnosed rhythm disturbances – ventricular and supraventricular	58%
Uncontrolled arterial hypertension.	71%
154 patients who had overcome the infection in the previous 3 months, underwent echocardiography and had small pericardial effusion	6%
Symptoms of heart failure – shortness of breath and peripheral edema, mainly with preserved EF, were found. NT-proBNP was not routinely examined	10%
Uncontrolled, long lasting antiaggregant and anticoagulant therapy, after the infection led to 6 cases of haemorrhagic complications. Fortunately, none of them was severe or fatal	1.2%

PATIENTS VISITING THE CARDIOLOGICAL PRACTICE IN YEARS 2021 & 2022

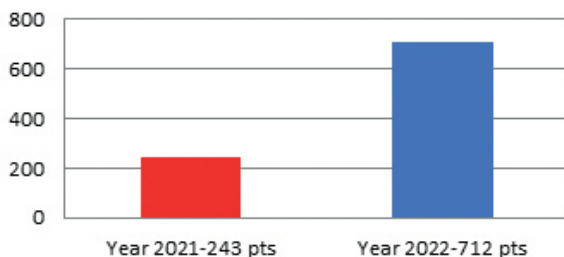


Fig. 4. Number of cardiological examinations in 2021 and 2022

When the patients were asked about their explanation of these symptoms, 74 % associated them with COVID 19 infection and 18 % with the vaccine.

DISCUSSION

COVID-19 infection, as respiratory but also endothelial disease, had many deleterious effects, especially in patients with cardiovascular, cerebrovascular, pulmonary and metabolic disorders. In Bulgaria it significantly increased the mortality rate in direct and indirect manner. In our country the vaccination rate was

lowest in the EU region and that, combined with the many comorbidities, led to excess of severe and complicated cases. The hospitals were not prepared for such pandemic eruption and were pushed to their limit to treat the patients with COVID infection. That is why their usual activities were reduced below the critical minimum. Many acute coronary syndromes, strokes and worsened heart failure cases didn't receive adequate treatment [17-21]. The outpatient care of cardiovascular diseases was also strongly damaged during the pandemic years. The fear and anxiety were widely spread in the Bulgarian society. Significant number of patients missed their regular visits and also interrupted their therapy. [27]. That resulted in poor control of arterial hypertension [28], delayed hospitalizations for acute coronary syndromes and heart failure, uncertain control of anticoagulation [27, 28]. These observations were confirmed by our study. One year after the peak of the pandemic, the post-Covid symptoms affected great number of hypertensive patients. Up to 71% of them still had problems with the control of the arterial hypertension and there was significant number of newly diagnosed cases of rhythm disturbances and heart failure (mainly with preserved EF). The number of pericardial effusions in our group was relatively low and none of them was severe. The long-term consequences of this infection are not clear and will be assessed in the future [29, 30].

CONCLUSIONS AND LIMITATIONS

Our research confirmed the major problems of outpatient cardiovascular care in Bulgaria during the COVID and early post-COVID years. It's design was observational, retrospective and single centre study. The ambulatory cardiological practice that was investigated is located in the city centre of Sofia and that can explain relatively high vaccination rate of the patients with age more than 65, but this population is not representative for other regions of Bulgaria.

No conflict of interest was declared

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