

Hospitalizations and interventional procedures in cardiology departments in the region of 2.5 million inhabitants during the SARS-CoV-2 pandemic

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INTRODUCTION

The COVID-19 pandemic has affected many aspects of our lives. This applies in particular to healthcare, and it is important to understand that it is not only restricted to aspects that are directly related to the diagnosis and treatment of SARS-CoV-2 infection. Other medical specialties face a number of barriers and everyday difficulties in carrying out their work and the consensus is that the care of patients with other diseases has deteriorated recently, thus a term of a syndemic has been coined to reflect collateral damage to non-communicable diseases care. It is disturbing that this also applies to cardiovascular diseases, which are the most common cause of death in Poland [1, 2].

A multicenter study from 15 European countries shows a 32% decrease in the number of patients hospitalized in cardiology departments [3]. The reduction in the number of acute coronary syndromes in the analysis was 32% in ST-segment elevation myocardial infarction (STEMI), 44% in non-ST-segment elevation myocardial infarction (NSTEMI), and 21% in unstable angina (UA) [3]. Recent data published by the National Registry of Interventional Cardiology Procedures in Poland, the respective percentages are 36%, 39%, and 58%, with an accompanying 74% decrease in the number of procedures in chronic coronary syndromes [4]. The number of coronary angiography and angioplasty in high-volume interventional cardiology centers in Poland

decreased 44% and 36%, respectively [5] with significant regional disparities [6].

The main goal of this publication is to compare quantitative data of cardiac hospitalizations and coronary interventions in years 2019–2020 from all cardiology departments that provide care to the population of 2.5 million inhabitants of the Lodz Voivodship.

METHODS

Every year, the National Cardiology Consultant and regional representatives send a questionnaire to all heads of cardiology departments in Poland. The results of the questionnaire include the number of performed cardiological procedures, predominantly coronary interventions and electrocardiology. The analysis of the data is used by the National Cardiology Consultant in planning activities as part of his professional duties and it is the subject of joint discussions at annual meetings.

In order to calculate the actual impact of the COVID-19 pandemic on the work of cardiology departments, the 2020 questionnaire was sent to all 22 cardiology departments in Lodz Voivodship, referring to the same areas of activity of the centers, but divided into consecutive quarters of 2020. The date of hospital discharge (before or after April 1st, 2020) was adopted as a decisive factor for assigning a given procedure to the pre-pandemic quarter. As the Ministry of Health declared the national state of epidemics

on March 20, 2020, we assumed that the consequences in terms of numbers of procedures could be detected starting from the second quarter of 2020.

The scope of the analysis included the number of beds, the composition of the medical staff, the number of hospitalizations and coronary interventions in each center, divided into the following categories: coronary angiography (CORO), coronary angioplasty (PTCA), STEMI, NSTEMI, UA and chronic coronary syndromes (CCS). Data on the procedures performed in the field of electrocardiology will be analyzed separately.

Statistical analysis

For that statistical analysis the hospital administrative data was used, therefore the Ethics Committee agreement was not required. The Wilcoxon's test was carried out in order to determine whether the paired sets of data collected by the 22 cardiology departments were statistically different. Statistical analysis was performed in STATISTICA 13.1 software (TIBCO Palo Alto, CA, USA) and *P* values at the level of 0.05 were considered statistically significant.

RESULTS AND DISCUSSION

The total number of beds in cardiology departments did not change significantly (561 in 2019 vs 580 in Q1 2020, $P = 0.47$; 561 in 2019 vs 564 in Q2 2020, $P = 0.80$; 561 in 2019 vs 533 in Q3 2020, $P = 0.62$; 561 in 2019 vs 577 in Q4 2020, $P = 0.62$). This includes similar numbers of Intensive Cardiology Unit beds (149 in 2019 vs 152 in Q1 2020 $P = 0.19$; 149 in 2019 vs 150 in Q2 2020, $P = 1.00$; 149 in 2019 vs 144 in Q3 2020, $P = 0.42$; 149 in 2019 vs 149 in 4Q 2020, $P = 1.00$), with similar numbers of working cardiologists (216 in 2019 vs 214 in Q1 2020, $P = 0.61$; 216 in 2019 vs 216 in Q2 2020, $P = 0.58$; 216 in 2019 vs 227 in Q3 2020, $P = 0.31$; 216 in 2019 vs 228 in Q4 2020, $P = 0.31$). The following total numbers of beds (with numbers of Intensive Cardiology Units beds in parentheses) were dedicated to COVID-19 patients in the consecutive quarters of 2020: Q1, 0 (0); Q2, 20 (8); Q3 14 (8); Q4, 60 (20).

The relative numbers of hospitalizations and coronary procedures in 2019 and consecutive quarters of 2020 are presented in Figure 1. The Supplementary material presents all 22 heads of cardiology departments, all numerical data, statistical analysis, as well as the original survey.

The key information resulting from the presented data is a statistically significant decrease in a total of hospitalizations and a noticeable but statistically insignificant decrease in the number of interventions in NSTEMI patients in the pandemic quarters of 2020 compared to the quarterly average of 2019. In addition, there is only a modest decrease in the number of interventions in STEMI patients with a statistically significant difference detected only between the average value in 2019 quarterly and in the first quarter of 2020 (the average value of 508 in 2019 vs 522, 447, 493, 442 in consecutive quarters of 2020). There is also a statistically significant decrease in the total number of

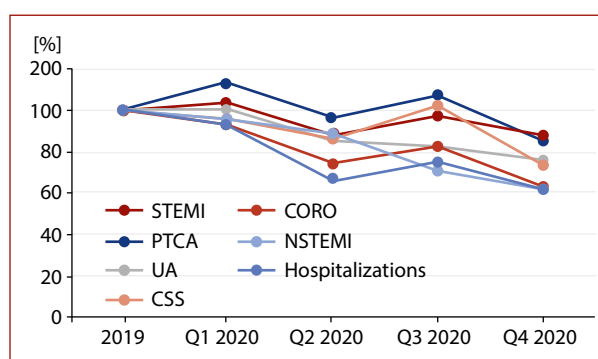


Figure 1. Hospitalizations and coronary procedures in all cardiology departments in Lodz Voivodship in years 2019–2020, shown as a percentage of the mean numbers in the corresponding quarters (Q) of 2019. The list of items was ranked from the highest percentage in Q4 2020.

Abbreviations: CCS, chronic coronary syndrome; CORO, coronary angiography; NSTEMI, non-ST-segment elevation myocardial infarction; PTCA, coronary angioplasty; STEMI, ST-segment elevation myocardial infarction; UA, unstable angina

PTCAs between the first and third quarter of 2020 and the quarterly average of 2019 (2019 in the year 2019 vs 2283, 1946, 2131, 1717 in consecutive quarters of 2020).

These observations indicate a good adaptation of the guidelines of the European Society of Cardiology [7], the Polish Cardiac Society [8], at least regarding the number of coronary procedures in the emergency states. The lack of significant decrease in the number of STEMI patients who underwent interventional treatment seems to confirm the high efficacy of the teams' work.

On the other hand, a significant reduction of interventional revascularization procedures in NSTEMI is likely to generate heart failure patients in the future. Additionally, the significant decrease in the total number of hospitalizations not aimed at coronary interventions is worrying.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/kardiologia_polska.

Article information

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Conflict of interest: None declared.

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