

Procedural volume of cardiac electrotherapy procedures does not have to be reduced during COVID-19 pandemic — one-year analysis from a tertiary Polish center

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INTRODUCTION

In the early months of 2020, the global pandemic of coronavirus disease 2019 (COVID-19) began. The novel disease started to use a substantial amount of healthcare resources, which along with patients fear of contacting healthcare providers, led to the limitation of care for diseases requiring urgent hospitalization [1–4]. The Heart Rhythm Section of the Polish Cardiac Society issued an opinion to aid with clinical decisions regarding cardiac electrotherapy patients and advising to postpone planned procedures but continue performing necessary interventions in urgent and life-threatening conditions, testing patients for SARS-CoV-2 to limit the spread of the disease, and using appropriate protection by the operating teams [5]. For follow-up care, telemedicine solutions were developed and applied, where feasible [6]. Nonetheless, during the initial months of the pandemic, a significant fall in the number of procedures was observed [7]. To avoid that case in our hospital, a dedicated logistic workflow was introduced for patients referred for cardiac electrotherapy procedures to keep as high availability of our services as possible. The report aims to analyze the impact of such an approach on the numbers of procedures performed in our institution throughout the first year of the COVID-19 pandemic in 2020.

METHODS

Workflow of patients' admission to the Department of Cardiology and Electrotherapy of the Medical University of Gdansk, Poland, was organized in the following way: 2 pathways were designed, depending on the urgency of each case. Patients admitted to the emergency department if diagnosed with a condition re-

quiring hospitalization and intervention with no delay, were tested for SARS-CoV-2 before admission and awaited the result in an isolation room. In case of a positive result, they were transferred to a dedicated COVID-19 cardiology department in another hospital. If negative, they were admitted to our department, and relevant interventions were planned and performed. Patients for planned procedures, queued according to the urgency of their condition, were invited for SARS-CoV-2 testing the day before planned admission, and then awaited results at home in self-isolation (as declared and signed at the time of testing). The physician on duty or a dedicated resident contacted the patients with test results. Negative patients were asked to come for planned hospitalization on the next day and any accidentally positive patients were re-directed to their family doctors for further assistance, and appointed again, had the infection finished.

To evaluate the effect of such a workflow, we analyzed the numbers of various electrotherapy and electrophysiology procedures performed in our department, classified into appropriate categories and counted in different time intervals. We compared numbers of procedures in consecutive months of 2020, with special attention paid to April 2020 (the first lockdown), as well as the total numbers in 2020 and preceding years (2019 and 2018). Then we analyzed the period from March to May 2020 (the quarter of most strict regulations) in comparison with the remaining months of 2020 and the analogous period (March–May) of 2018 and 2019. No approval of the Bioethical Committee was deemed necessary, as our analysis comprised only anonymized administrative data from our hospital registries.

Statistical analysis

Continuous variables were presented as median and quartiles due to non-normal distribution. The normality of distribution was tested with Shapiro-Wilk test. The Mann-Whitney U test was used to compare the groups. A *p* value of below 0.05 was considered statistically significant. Statistical analysis was performed with the use of Statistica 13.1 software (StatSoft, USA).

RESULTS AND DISCUSSION

Procedure counts throughout the year 2020 are presented in **Figure 1**. Detailed counts and comparisons may be found in Table S1 (Supplementary material, *Table S1*). Low counts in some categories may be a limitation of that analysis. There was a decrease in the total number of procedures in April 2020. That was the month that coincided with the most strict limitations (on the national level, in expert opinions and our local in-hospital regulations). The total number of procedures and all the grouped counts in April were numerically lower from the monthly median for the rest of 2020. The 3-month period from March to May comprised both the time of limitations and then countermeasures introduced in our hospital to restore the procedure volume. The comparison of that quarter to the rest of 2020 showed that only the total number of procedures and the median number of ablations were significantly lower. It means that despite the sudden drop in April, most procedural volumes were soon restored to

almost normal values. When we compared the quarterly medians from March to May 2020 with the same period in 2018 and 2019, only the number of pacemaker implantations was lower in 2020 (11 vs 21; *P* = 0.028). The rest of the procedural groups and the total number was not lower in the pandemic year, compared to previous years. The total number of procedures in the whole of 2020 was higher than in the preceding years (a continuous increase was observed from 913 procedures in 2018, through 932 in 2019 to 971 procedures in 2020).

In a recent report by Wranicz et al. [7], analyzing data derived from periodic surveys for the national consultant in cardiology in the Province of Łódź, the numbers of electrotherapy procedures in the first quarter of 2020 were similar to analogous counts in 2019, whereas the second quarter of 2020 brought a drop in those numbers. In our report, a drop in the numbers of all procedures was noted in April 2020, which is partially consistent with the second quarter of 2020 in the report from Łódź. Similarly, the median number of pacemaker implantations in our report was lower in 2020 than in the corresponding period of previous years.

In a publication from Italy, Migliore et al. [8] reported a drop in urgent pacemaker implantations, comparing 6 weeks before and after the pandemic outbreak. Our dataset lacks information detailing indications on a patient-by-patient basis, however, we observed a numerical drop of pacemaker implantations in April but in our analy-

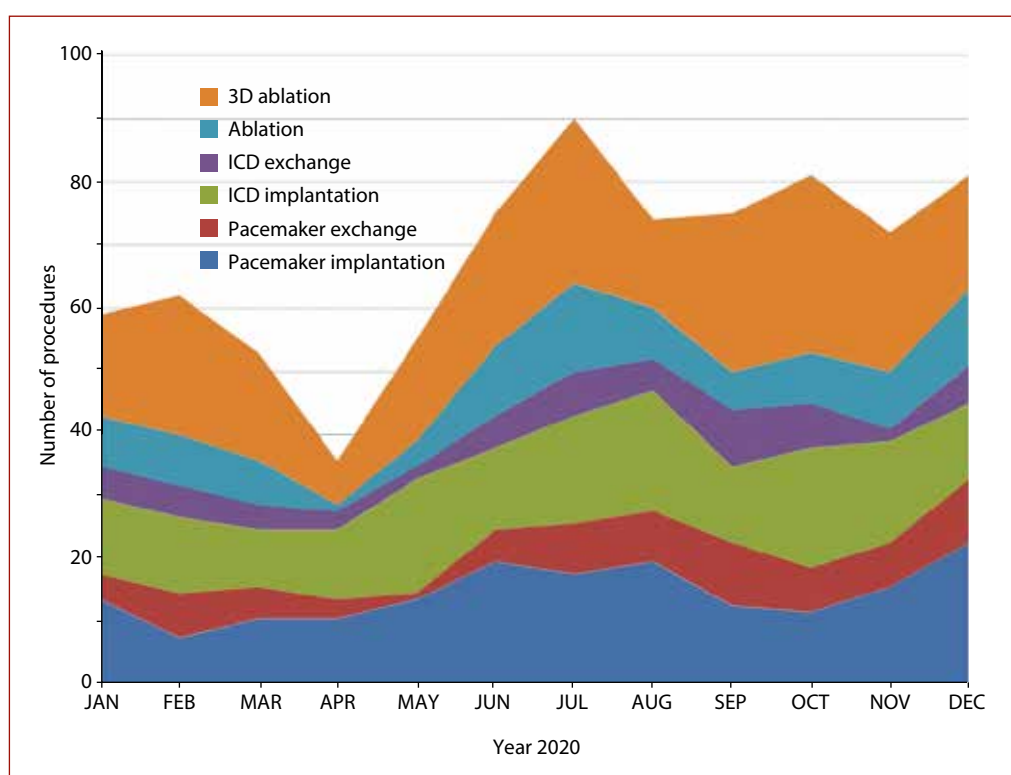


Figure 1. Numbers of electrotherapy procedures in successive months of 2020.

Abbreviations: 3D ablation, ablation with a 3-dimensional electroanatomical system; ICD, implantable cardioverter-defibrillator

sis, for the 3-month period of most strict limitations, it was not significantly lower than during the rest of 2020.

The above analysis, in our opinion, proves that despite a sudden drop in the number of electrotherapy procedures in April 2020 due to various over imposing limitations (national lockdown, fear of patients to contact healthcare providers, and drop in admission and referral rates) the procedural volume of a tertiary electrotherapy center could be promptly restored with appropriate organizational and logistic measures. The „lockdown drop” of the numbers of various types of cardiac procedures resulted directly from limitations imposed on healthcare systems could have been anticipated given the nature of those limitations, which was confirmed in previous reports [1–4, 7, 8]. We believe that the effort made to restore and further sustain the numbers of electrotherapy procedures throughout the first pandemic year, brought a result that only a few would have predicted in early 2020, that is the maintenance of high volume in most electrotherapy procedures, as supported by the above analysis.

Supplementary material

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

Article information

Conflict of interest: None declared.

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