

The impact of the SARS-CoV-2 pandemic on screening tests rates in breast and cervical cancer

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A – Research concept and design, B – Collection and/or assembly of data, C – Data analysis and interpretation, D – Writing the article, E – Critical revision of the article, F – Final approval of the article

Abstract

The global SARS-CoV-2 pandemic had a significant impact on the availability of screening for breast and cervical cancer. In Poland, two pandemic waves were observed in 2020, characterized by an increase in the number of confirmed cases and deaths caused by the SARS-CoV-2 infection. This situation has reduced the number of patients registering for mammography and cytological tests. The aim of this study is to describe the problem using the available numerical data obtained from the database of the regional branch of the National Health Fund regarding the significant decrease in the number of screening tests for breast and cervical cancer in the Podkarpackie Voivodeship during the SARS-CoV-2 pandemic.

Keywords: SARS-CoV-2 pandemic, breast cancer prophylaxy, cervical cancer prophylaxy, public health

Introduction

The SARS-CoV-2 pandemic had a significant impact on behavior associated with a healthy lifestyle in many societies in the world. It started with “patient zero”, a case reported in Wuhan in China on December 1, 2019 [1]. By the end of 2019, there were 41 cases of pneumonia of unknown etiology [2]. After several months of observation of the spread of coronavirus to all continents and most countries of the world, taking into account that sanitary and medical services were inadequately prepared, at the beginning of March 2020 WHO decided to declare a state of global pandemic. During the first months, the countries with the largest increases in the number of cases were China, Italy and Spain. In Poland, the first confirmed case was recorded on March 4, 2020 in a patient who had come from Germany [3]. After that, two peaks in the number of cases were observed, with the

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highest daily survival rate of 27,875 cases [4]. Throughout 2020, 1,305,744 infections were recorded in Poland, of which 28,956 cases were fatal [5]. The introduction of drastic restrictions by individual countries has contributed to a gradual reduction in the number of cases and deaths due to pneumonia caused by SARS-CoV-2. During the lockdown period, only urgent medical services were guaranteed. All non-urgent services such as cervical screening and breast cancer screening were temporarily suspended. The SARS-CoV-2 pandemic caused a delay in or cancelation of screening tests, which resulted in a diagnosis being made at a later stage with a worse prognosis. Difficulties in access to healthcare and patients' fear of potential infection in health facilities delayed the diagnosis and adequate treatment of cancer patients. It is estimated that in the UK alone, around 3 million people left cancer screening during the five-month follow-up period, which resulted in around 350,000 fewer diagnoses [6]. Pandemic development indicators in relation to the number of new cases and deaths daily are presented in Figures 1 and 2.

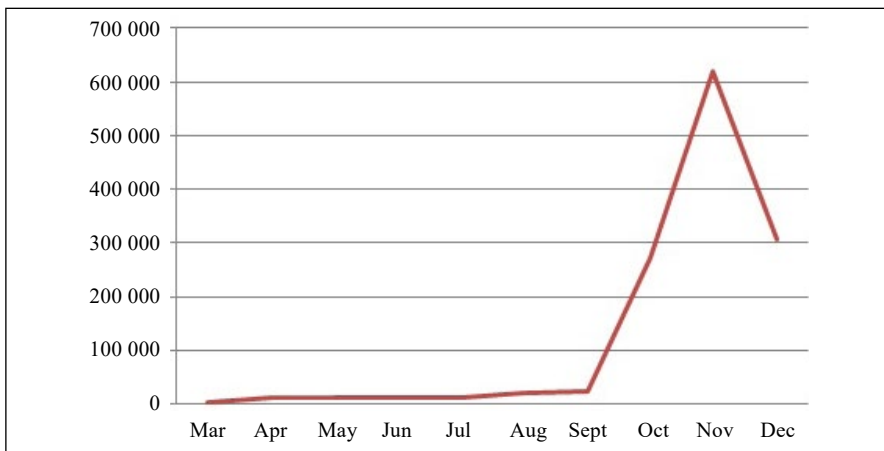


Figure1. Number of new SARS-CoV-2 cases reported in Poland in 2020

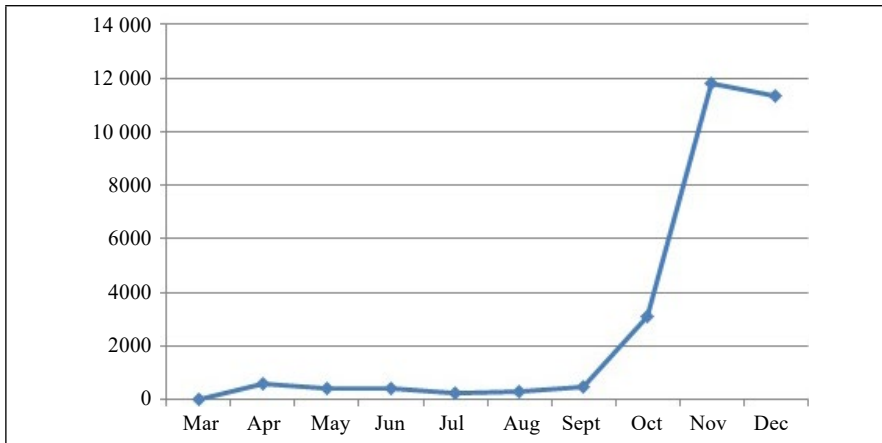


Figure 2. Number of deaths due to SARS-CoV-2 reported in Poland in 2020

Objectives

The objectives of our study are to compare the reporting of patients and the number of prophylactic procedures performed on the reproductive organs and breasts in the Podkarpackie Province in Poland during the SARS-CoV-2 pandemic.

Methods

The comparative data used in this study were provided by the provincial branch of the National Health Fund. The number of patients reporting for prophylactic examinations in the field of cervical and breast cancer in the years 2019–2020 was compared and contrasted.

Results

The purpose of secondary prevention of neoplastic diseases is to reduce morbidity and mortality. The aim of the cervical and breast cancer screening program is to achieve this goal. A measurable result of screening tests is achievable if 70% of cases are reported. In Poland, in accordance with the National Health Program 2016–2020, several types of screening test are carried out, including mammography in the prevention of breast cancer and cytological examination in the prevention of cervical cancer. At the time of the SARS-CoV-2 pandemic, a significant reduction in the number of cases reported to health services was noted, including among people covered by preventive programs.

Prophylaxis of breast cancer

The breast cancer prevention program which focuses on screening mammography is aimed at women aged 50–69 who have not had a mammogram in the last two years or annually for women at risk [7]. Between 2018 and 2020, 5,353,470 women were deemed eligible to take part in the breast cancer prevention program. 1,848,381 mammography tests were performed, which meant that 34.53% of those eligible were screened.

The percentage of studies carried out changed significantly after the outbreak of the global SARS-CoV-2 pandemic. In 2019, 49,955 mammography tests were performed in the Podkarpackie Voivodeship, and 32,510 mammography tests in 2020. The largest drops in the number of tests performed were recorded during the first wave of SARS-CoV-2 in April and May 2020; by 51.93%, 96.27% and 90.48%, respectively (by a total of 77.37%). However, during the second wave of SARS-CoV-2, the largest decrease in the number of mammograms performed was recorded in November – 46.04%. The number of mammographic tests is presented in Figures 3 and 4.

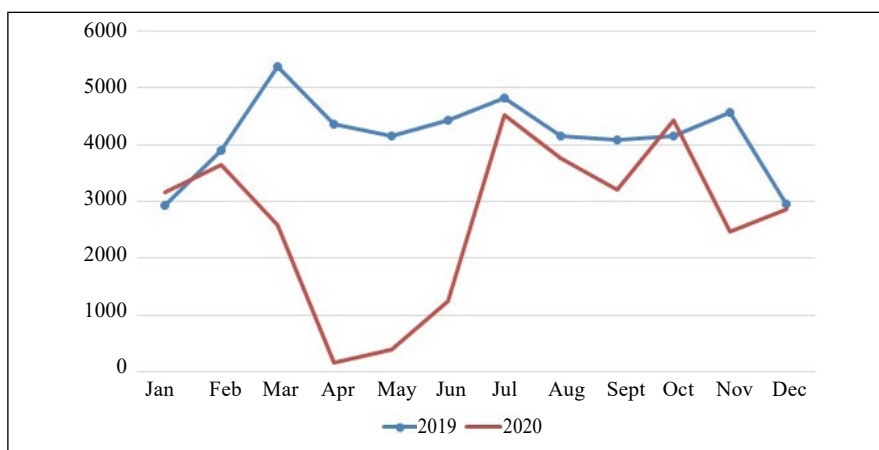


Figure 3. Amount of mammography tests performed in the Podkarpackie Province in 2019–2020

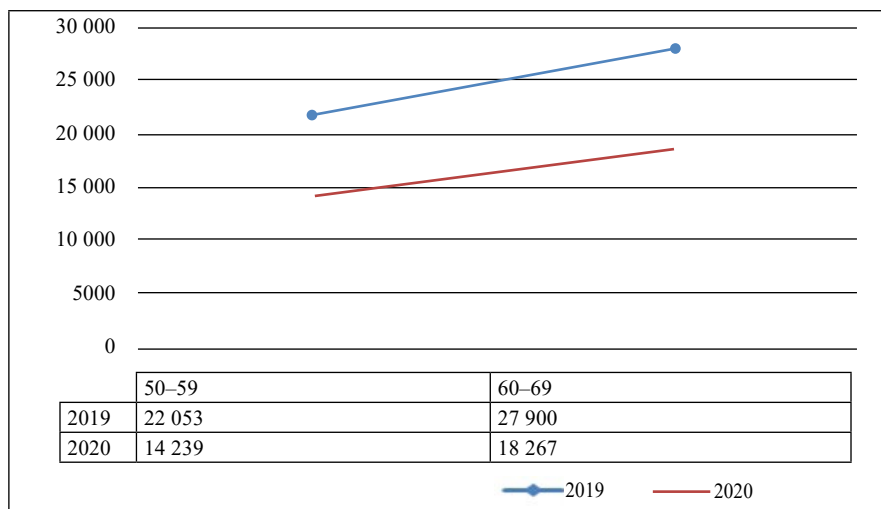


Figure 4. Amount of mammography tests performed in the Podkarpackie Province in 2019–2020 divided into age groups

Cervical cancer prevention

The cervical cancer prevention program carried out by screening smears is aimed at women aged 25–59 who have not had a Pap smear test in the last three years, who have risk factors or have completed oncological treatment for cervical cancer. Between 2018 and 2020, a total of 9,977,646 women were deemed eligible for the cervical cancer prevention program. 1,380,428 cytological tests were performed, which meant that 13.84% of those eligible were screened.

In the case of cervical cancer screening, the SARS-CoV-2 pandemic resulted in significantly lower patient reporting. In the Podkarpackie Voivodeship, 22,694 were registered in 2019, and 13,833 pap smears were performed in 2020, which is a decrease of 39.05% compared to the previous year. The largest decrease in the number of cytologies performed was recorded during the first wave of SARS-CoV-2, in March, April and May, of 66.05%, 94.97% and 72.24% respectively (total 77.04%) compared to the number of tests performed in those months a year earlier. During the second wave of SARS-CoV-2, in October and November 2020, there was a decrease in the number of tests performed of 40.76% and 35.9% compared to the previous year (38.5% in total). The number of cytological tests carried out is presented in Figures 5 and 6.

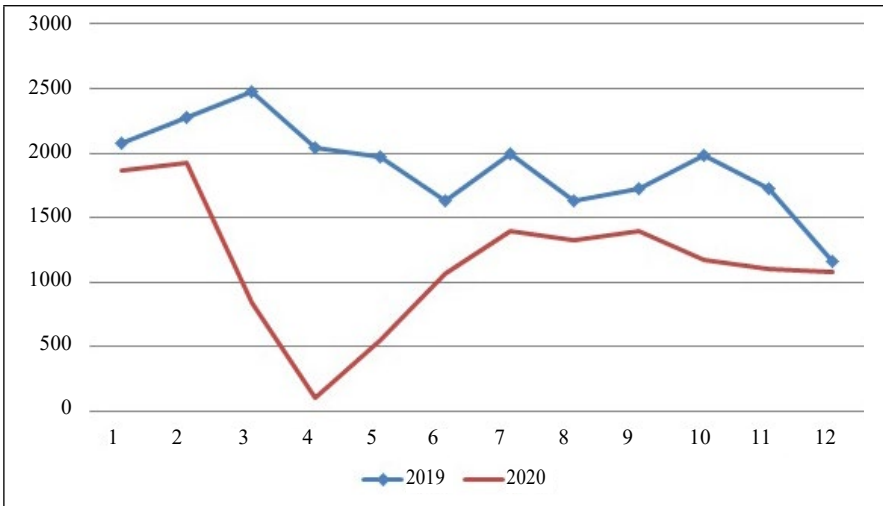


Figure 5. Amount of cytological tests performed in the Podkarpatie Province in 2019–2020

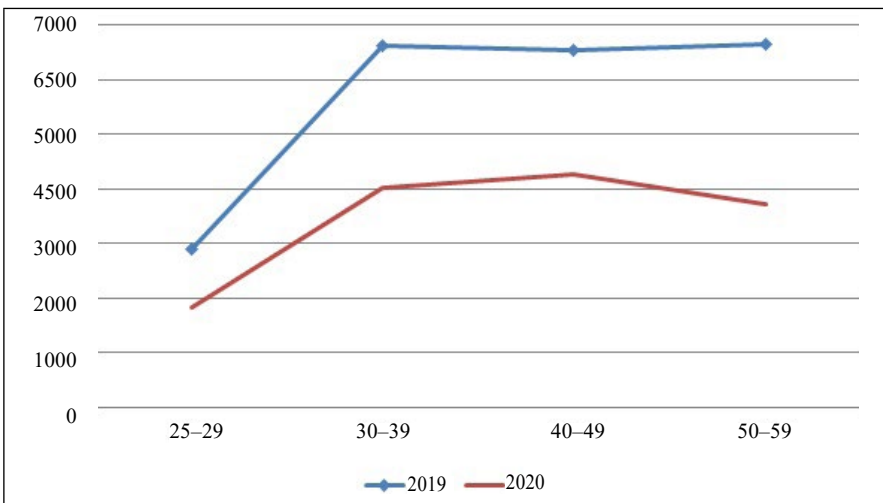


Figure 6. Amount of cytological tests performed in the Podkarpatie Province in 2019–2020 divided into age groups

Discussion

The available literature lacks statistical analyses and publications on the impact of the SARS-CoV-2 pandemic on the number of preventive examinations carried out in countries that have breast and cervical cancer screening programs.

Sprague et al. present an analysis of statistical data concerning prophylactic mammography from many centers in the period of the first wave of cases in the USA. Between January and July 2020, 66.2% of the number of prophylactic mammograms were performed compared to the same period a year earlier. The study also noted a gradual increase in the number of mammograms performed during the period of falling SARS-CoV-2 cases in the USA in May and June 2020 [8].

Naidich et al. report a 58.42% decrease in the percentage of mammographic tests performed in several dozen centers included in the study in the state of New York (USA) between March and April 2020 [9]. Similar observations were made in the same period in the work of Yin et al., where the decrease in the number of mammograms performed was on average 72.1%, and the largest weekly decrease was observed at the beginning of April 2020, when only 5.4% of the tests were performed compared to the period before the pandemic [10]. Miller et al. compared the number of Pap smear test in the period before the lockdown was announced in the US, lasting from mid-March to mid-June, as well as during and after the lockdown. These figures were compared to the number of tests performed in 2019 in the relevant time periods. During social isolation, a decrease of 78–82% in the number of tests performed was observed, and a decrease of 24 to 29% in the few months of follow-up after the lockdown ended [11].

The studies by Burger et al. present mathematical models illustrating the possible health risks caused by inhibition of the Pap smear test as part of cervical cancer prophylaxis. It has been estimated that in 2027 the incidence of this disease will increase by 5–7 / million of women surveyed if the number of screening tests carried out during the pandemic, which lasted six months, is reduced. In the event of a 24-month deadlock in which smear tests are abandoned, the incidence could increase by 38–45 / million women tested [12].

In response to the limitations related to the global SARS-CoV-2 pandemic regarding the prevention of breast and cervical cancer, many learned societies have decided to issue new recommendations or proposals for procedures as far as screening these cancers is concerned. An example is the position of the American Society of Cervical Colposcopy and Pathology (ASCCP), which issued recommendations initiating a temporary suspension of planned procedures. Only in field cases was it recommended to limit the number of cytological examinations. There are also recommendations regarding the performance of a follow-up colposcopy on the basis of the Pap smear result [13,14]. Recommendations are issued by learned societies in order to unify the treatment of patients during the SARS-CoV-2 pandemic, while maintaining the priorities of screening and sanitary safety [15–17].

The authors of this study also point out the great importance of conducting further research, which will certainly have an impact on understanding of the impact of the SARS-CoV-2 pandemic on women's health [18].

Conclusions

The increased effort of sanitary services and the adaptation of health care systems should contribute to the development of safe management standards and broaden patients' access to oncological prophylaxis and treatment. This will enable the improvement of the public health situation across the globe at the time of the SARS-CoV-2 pandemic.

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