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Prevention of cervical cancer in Poland before and during the COVID-19 pandemic

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ABSTRACT

Cytodiagnostic prophylaxis programs conducted in recent years have contributed to a significant decrease in the incidence of cervical cancer. Obtaining results in the form of effective screening required years of work, constant financial outlays, quality control of the actions taken, as well as systematicity and cooperation of multidisciplinary teams of doctors, midwives and many institutions. While the time before the outbreak of the COVID-19 pandemic brought positive effects of such actions, the pandemic caused a decrease in the number of tests performed and, consequently, an increase in the incidence of cervical cancer. The aim of this study is to present the scope of activities included in cervical cancer prevention programs in Poland before and during the COVID-19 pandemic and to show the relationship between the effectiveness of preventive activities and the incidence of cervical cancer among women.

Keywords: prevention, cervical cancer, COVID-19

INTRODUCTION

Recent years in medicine have been a time when the huge role of preventive measures has been emphasised. Undoubtedly, the development of vaccines revolutionized the world and became a breakthrough in the prevention and treatment of many diseases. Cervical cancer fits perfectly into all concepts of prevention (Curyło-Sikora, 2016). A distinction is made between primary and secondary prophylaxis, and preventive examinations have an impact on reducing mortality.

The disease entity of cervical cancer is the first type of human cancer for which triggers and predisposing factors have been defined. Numerous studies have unequivocally demonstrated a link with infections, especially oncogenic strains of HPV (*Human Papilloma Virus*). It is believed that more than 99% of cervical cancers are linked to human papillomavirus infections, although 80% of all HPV infections are self-cured. This is because only about 20% of viruses have the ability to complete their replication cycle (Bręborowicz, 2016).

Numerous studies indicate that cervical cancer develops in 3-5% of infected women. This process, untreated, progresses within 8-12 years to the so-called invasive stage, when cancer cells begin to penetrate the basement membrane of the epithelium and invade the cervical wall. They have the ability to form metastatic foci via lymphatic and blood vessels.

It is well known that the sexually transmitted HPV virus often causes chronic infection with high-goncogenic types of this virus. It is both the main and the most important of all risk factors for cervical cancer. It often acts as a promoter. In contrast, other viruses, such as herpes virus and bacteria, only play a role in the process of carcinogenesis. In addition, factors such as nicotinism, early initiation of sexual intercourse or a large number of sexual partners, low socioeconomic status, neglect of personal hygiene, longterm use of oral hormonal contraception, or hormone replacement therapy stand out among the factors that increase the likelihood of persistent infection (Faridi, 2016).

As a response to the problem of high incidence and mortality of cervical cancer world-wide, it became possible to introduce the HPV vaccine (primary prevention) into widespread use, aimed at reducing the aforementioned rates (Wójtowicz, 2016), and to develop cytological screening and HPV testing (secondary prevention). Very often cytological screening is performed in combination with HPV testing (Dębski, 2009).

The overriding aim of prophylactic tests, which cover the entire healthy population, has become the earliest possible detection of cancer and the rapid initiation of appropriate, effective treatment. Cure, and thus lowering the mortality rate, has also become the top priority for prevention (Stępień, 2011).

PROPHYLAXIS OF CERVICAL CANCER IN THE PERIOD BEFORE THE OUTBREAK OF THE COVID-19 PANDEMIC

The cervical cancer prevention programme has been operating in Poland since 2006. It is aimed at women between 25 and 59 years of age who are insured in the National Health Fund (NFZ), including women who have not undergone such examinations within the last three years. The exceptions are women who were referred for an addi-tional examination because of changes detected in the primary examination. It should be remembered that the available statistics do not include the number of tests performed outside the programme in private practices and clinics that do not cooperate with the NFZ. Women who undergo tests in such places are therefore not registered in the general database, which means that they are not fully monitored.

Cytological examinations are carried out every three years and are supposed to reduce the number of infections by up to 90%. Cytological examinations are recommended to women who are at least 21 years old, but not later than in the third year from the beginning of sexual inter-course by a woman. However, due to the high percentage of false-positive results in younger women, i.e. 21-25 years of age, it is not recom-mended to carry out tests and implement deeper diagnostics, as this age group has a low risk of developing cancer. The upper limit in Poland for carrying out prophylactic cytological exami-nations is when a woman reaches the age of 60 (Stępień, 2011).

Data from 2010, when the programme was in its early stages, shows that the enrolment of women for screening was very low. The rate depended on the place of residence. At that time the per-centage of inhabitants of particular provinces who responded to personal invitations to cervical cancer screening was appallingly low and amounted to approximately 9%. Whereas, within the framework of the whole population scre-ening for early detection of cervical cancer, the number of all examinations performed was only 25%.

For the first time, in addition to the undoubted need and willingness to carry out mass and active screening programmes, financial resources were allocated for this purpose, making it possible, it would seem, to carry them out effec-tively. Numerous diagnostic bases have been created, operating on the basis of health pro-grammes, particularly active in the years 2014-2019. Citing the results of other countries, applying controlled cytodiagnosis covering at least 2/3 of the population of women examined, in which an 80% decrease in the incidence of cervical cancer has been achieved, as well as, significantly, a 70% decrease in mortality (Jemal, 2011) – cytological screening has also become in Poland a basic and necessary element of prevention and early detection of cervical cancer (Spaczyński, 2009).

There has been considerable interest in proph-lactic activities in Poland, though the reporting rates for prophylactic examinations and the number of examinations performed have not been satisfactory and have varied depending on the region of the country. In different parts of Poland, at different times, in addition to the implementation of the programme, numerous promotional activities and educational meetings were held in hospitals, outpatient clinics and gynaecological surgeries, involving medical professionals and local authorities.

According to the data obtained from the imple-mentation of the population-based programme of cervical cancer prevention and early detection within the framework of the National Programme for Combating Cancer Diseases for the years 2007-2010, three provinces were characterised by the highest enrolment of women covered by the exa-minations in 2007: namely Warmińsko-Mazurskie (41.58%) in first place, followed by Opolskie (32.15%) and Pomorskie (29.31%). The lowest notifiability was in Lubuskie (15.88%), Podkarpackie (12.04%) and finally Wielkopolskie (10.43%). The situation was similar in 2008, when Warmińsko-Mazurskie (33.59%) and Opolskie (30.97%) provinces also led in the reporting of the female population. The lowest percentage of notifications also occurred in the Wielkopolskie (18.73%), Łódzkie (19.04%) and Mazowieckie (18.12%) provinces. In subsequent years, the Warmińsko-Mazurskie (2009-33.88%, 2010-26.49%) and Opolskie (2009-32.38%, 2010-22.73%) provi-nces were also leaders in the implementation of the population-based prophylaxis of cervical cancer, although to a lesser extent. The worst results were obtained in Wielkopolskie province (2009-19.76%, 2010-12.56%). Thus, the highest percentage of women's participation in the programme in the years 2007-2010 was in the

Warmińsko-Mazurskie, Zachodniopomorskie, Opolskie provinces, with the greatest differences in 2007. The lowest percentage of the examined population could be observed in the Wielkopolskie, Mazowieckie and Podkarpackie provinces (Spaczyński M., 2010).

Effective cervical cancer prevention strategies were based on international experience and recommendations in the three most important areas. These concerned cytological examinations, vaccinations and educating the public on the dangers of cancer and HPV and the possibilities of effective prevention. In connection with primary prevention, which concerned vaccination, and secondary prevention concerning cytology, education played a special role. The assumption was to address it to as many addressees as possible and to conduct it as to build public awareness and to mobilise individuals to take part in examinations. It was considered to be the most important factor influencing the effectiveness of prevention.

Actions taken in Poland as part of HPV prevention have been implemented by many institutions, which had not yet been fully compatible. That is why implementing a coherent, common strategy was difficult. In Poland, among the three pillars of cervical cancer prevention, most attention has so far been paid to cytological examinations, while issues of vaccination have depended on the region of the country (implementation of local government programs). HPV vaccination, which has been on the list of recommended vaccinations since 2013, but unfortunately not publicly funded. Only some local government prevention programmes have carried out free HPV vaccination. An interesting form of program in the prevention of HPV papillomavirus infection, referring to international recommendations concerning prevention based on three pillars, was implemented by the Warmian-Masurian Voivodship, which for a number of years was leading among other voivodships in the prevention of cervical cancer. It was introduced under the name "Health Policy Programme of the Warmińsko-Mazurskie Voivodeship for 2017-2019 in the prevention of human papillomavirus (HPV) infections – in particular, these were educational activities and vaccination of girls aged 11-13 years", to complement the national intervention. In the Warmińsko-Mazurskie Voivodship the incidence of cervical cancer in comparison to other voivodships remains at a moderate level.

Worldwide, 530,000 new cases were reported in 2012, while over 270,000 women died of the disease during the year. The high proportion of patients with cervical cancer in advanced stages of the disease (stage II, III, IV), placed Poland on one of the first places in Europe in this respect. This situation was associated with the generally poor state of health and life of Polish society, as well as with ineffective prophylactic measures of the health service at that time in comparison with other European countries. As a result, only about 12% of women of reproductive age were covered by cytooncological prophylaxis. The lack of an appropriate lobby which could exert political and social pressure to change the global health care strategy and the low socio-economic status of the patient population were also reasons for this situation.

According to data from the National Cancer Registry, in recent years in Poland, before the outbreak of the pandemic, there was a noticeable increase in the number of cases in women aged 35-44, as well as one of the lowest 5-year survival rates in Europe as a measure of the curability of this cancer. It was quite high at 48.3% against a European average of 62.1%. The cure rate, as previously mentioned, depends primarily on the stage of the cervical cancer at the time of diagnosis and the type of microscopic structure, the degree of maturity of the tumour and the depth of involvement of the uterine tissues, as well as the presence of lymph node metastases. According to the same registry, in 2013, 2909 women developed cervical malignancies, and the percentage of incidence according to the statistics has decreased by about 30% over the last three decades, which did not change the fact that the rates still remained high and still represented a serious epidemiological problem.

Subsequent years still brought new cases (about 3450 per year), despite the ongoing and widely available cytological prophylactic examinations and the increasing access to diagnostic tests. The problem was to a large extent caused by low social awareness, concerning the lack of the habit of prophylactic examinations and low knowledge about the possibilities of full cure of the disease in the case of early detection of cervical cancer (Stępień, 2011). That is why prophylactic programs and social campaigns aimed at raising public awareness and encouraging active prophylaxis are very important.

PREVENTION OF CERVICAL CANCER IN THE ERA OF COVID-19 PANDEMIC

The standardised death rate from cervical cancer has improved steadily in recent years. In 20 years, it has decreased from 8.74 (1990) to 5.57 (2018), highlighting the effects of the last five years, when a decrease of 13.8% was recorded (Wojciechowska, 2021). Due to the possibility of using effective intervention methods to reduce mortality from cancer, including cervical cancer – the National Program for the Control of Cancer was announced in 2005. However, the main objectives, relating to increasing screening attendance and thus achieving average European treatment success rates, were not achieved (Wojtyniak, 2018). Increasing screening attendance became the main objec-tive of the National Cancer Strategy, adopted in February 2020, with the aim of achieving rates of 60% in 2024. On the other hand, from March 2020, due to the epidemic situation, restrictions and limitations in social life and access to medical services began to be introduced. The development of the pandemic exposed the extremely difficult health situation of the population at that time in terms of the implementation of preventive programmes and chronically ill patients – including oncology patients, which are constantly increasing (Ramirez, 2020). Patients' fears of coronavirus infection and the suspension of preventive, diagnostic and treatment activities, associated with limited access to medical services, have contributed to this. For the past two years, the public attention of the entire world, has been drawn to the ever-increasing number of new cases of coronavirus infection, and the appeals of oncology specialists to ensure continuity of care for oncology patients have fallen by the wayside. Today, many researchers point out that the victims of the pandemic are not only the infected, but also people with other conditions and those who have been prevented or delayed from having preventive tests by the pandemic.

According to the data, in 2020 there were 3862 new cases of cervical cancer in Poland and 2137 deaths (11/100 000). For comparison, this disease entity in Poland ranks 6th among malignant neoplasms, while in Europe it ranks 9th in terms of incidence and 10th in terms of mortality (6.7/100 000) (Globocan, 2020).

Given that vaccination and screening among vaccinated and unvaccinated women is considered the best and most effective strategy for cervical cancer prevention, the results show that the timing of the pandemic may have adversely affected the statistics. While a few years before the outbreak of the pandemic may have seen slow but positive changes in the improvement of statistics relating to incidence and screening rates, the timing of the pandemic had an adverse effect. Restrictions and restrictions have made it more difficult to access basic medical services, including the possibility of carrying out preventive tests. It turns out that it is precisely prophylaxis that is the most affected area of Polish oncology.

The pandemic has affected oncological care in a heterogeneous way. The most significant changes in comparison to previous years in terms of detection, diagnosis, medical services occurred at the level of primary care and AOS in the period from March to May 2020. During this period, intensive activities were carried out throughout Poland to prevent the rapid spread of the epidemic. In addition, during this period there was general confusion about the information on the spread of the virus and public fear of SARS-CoV-2 infection.

According to the 2021 Report on "The Impact Of the COVID-19 Pandemic On the Cancer Care System", the number of new cancer diagnoses during this time dropped by approximately 20% in 2020 compared to 2019. Similar values were reported in other European countries. This report was created based on the analysis of data obtained from three provinces: Warmińsko-Mazurskie, Mazowieckie and Śląskie for the periods of March, April, May 2019 and identical months in 2020. These regions differed significantly in the number of confirmed infections and cancer incidence. An analysis was made in terms of continuity of services in oncology, where, among other things, one of the elements examined, was preventive examinations for cervical cancer. According to the information obtained, the epidemiological situation caused the number of cytological examinations to decrease by 60% in all three voivodeships in the month of March 2020. In the following two months, this percentage increased respectively: Warmińsko-Mazurskie 85%, Mazowieckie 87% and to 90% in Śląskie. Comparing month to month in the period January-February 2020, at the time of the growing number of infections, the individual provinces recorded the following percentage decreases in the number of tests performed:

Silesia -16.3%, Mazovia -12.6%, Warmia and Masuria -17.1%. In the period April-May 2020: Silesia -90.2%, Mazovia -87.0% and Warmia and Masuria -84.8%. This indicates a significant decrease in the number of completed surveys under the programme for all the analysed voivodeships.

Table 1. Summary of cytological tests performed in 2019-2020 according to the Report "Oncology in the time of COVID-19"

PAP SMEARS 2019 vs.2020					
	January	February	March	April	May
Śląsk	-22,7%	-4,7%	-61,0%	-95,8%	-84,8%
Mazowsze	-16,3%	-9,1%	-62,4%	-94,8%	-79,3%
Warmia and Mazury	-22,3%	-11,8%	-61,5%	-91,1%	-78,0%
	January-February			April-May	
Śląsk	-13,6%			-90,2%	
Mazowsze	-12,6%			-87,0%	
Warmia and Mazury	-17,1%			-84,8%	

It is worth mentioning that the analysis did not include examinations performed in private offices. Nevertheless, the statistics for this period are unsatisfactory and we still have to wait to learn about the longterm effects.

Preventive programmes against cervical cancer and other cancerous diseases are part of the WHO strategy "Health for All In the 21st Century", which concerns the reduction of non-communicable diseases. This strategy assumes maximum reduction of morbidity, disability and premature mortality due to chronic diseases, among others due to cervical cancer, the mortality rate of which in Poland is still at a high level and in this respect is among the top ten countries. According to the recommendations of the Expert Panel of the Polish Gynecological Society (PTG), the cervical cancer prevention programme should be implemented based on the principle: mother – cytological screening, daughter – vaccination against HPV. Therefore, cervical cancer prevention should be interdisciplinary, involving education and social activation as well as vaccination, screening, treatment and palliative care. Successive waves of the pandemic have evidently stopped or hindered education and research on cervical cancer prevention. This has placed new demands on medical professionals as well as on the country's health care system as a whole.

CONCLUSIONS

The onset of the pandemic is closely associated with a decrease in the number of cytological examinations performed in Poland. In the case of the individual voivodships of the country under discussion, there was a decrease in preventive measures at the same level. Therefore, this fact can certainly be associated with the consequences of the COVID-19 pandemic and the restrictions in place at the time.

Preventive screenings are fundamental in the fight against cervical cancer. The reporting and performance of cytological examinations is closely linked to women's awareness of the benefits of regular examinations. The COVID-19 pandemic, the associated restrictions and the public's fear of contagion have had an impact on the reporting and performance of cytological examinations, which allows us to conclude that the number of preventive examinations for cervical cancer decreased during the pandemic period, which may affect the fate and prognosis of women when cancerous lesions are detected at an advanced stage of the disease.

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