

Contraception for cancer survivors

Antykoncepcja u pacjentek po leczeniu onkologicznym

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Abstract

Modern methods of diagnosis and treatment allow for better survival outcomes and, more importantly, for higher curability of cancer. Female cancer survivors often need effective advice concerning the choice of birth control methods. The majority of gynecologists are reluctant to propose anything other than barrier methods due to lack of information concerning safe use of more effective contraceptives. The aim of the paper was to summarize indications and contraindications to different methods of contraception available to cancer survivors in Poland.

Key words: **contraception / cancer survivors / IUD / breast cancer / chemotherapy /**

Streszczenie

Nowoczesne metody diagnostyki i leczenia nowotworów pozwoliły na zwiększenie przeżywalności i co najważniejsze zwiększenie wyleczalności nowotworów. Kobiety które wygrały walkę z nowotworem często potrzebują skutecznej porady dotyczącej wyboru metody antykoncepcji. U tych pacjentek, większość ginekologów niechętnie proponuje metody inne niż barierowe ze względu na brak informacji dotyczących bezpieczeństwa zastosowania metod o wyższej skuteczności. Celem pracy było przybliżenie bezpieczeństwa i ocena skuteczności różnych metod antykoncepcji u pacjentek po leczeniu lub w trakcie leczenia onkologicznego.

Słowa kluczowe: **antykoncepcja / rak piersi / wkładka domaciczna / chemioterapia /**

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Introduction

Modern methods of diagnosis and treatment allow for better survival outcomes and, more importantly, for higher curability of cancer [1]. Female cancer survivors often need effective advice concerning the choice of birth control methods. The majority of gynecologists are reluctant to propose anything other than barrier methods due to lack of information concerning safe use of more effective contraceptives.

Depending on the study, from 10 to 25% of young female cancer survivors have been reported to enter their menopause prematurely. On the other hand, it also means that as many as 75-90% of the cured women can conceive effectively [2].

Regardless of that, cytostatic and/or radiation therapies are a direct indication to contraception also during the treatment, as it is highly teratogenic [3] and it is not recommended for some female cancer survivors (treated for e.g. breast cancer, choriocarcinoma) to conceive for the period of even a few years after their therapy [4]. Moreover, a high number of young women effectively cured of cancer do not want to start a family for reasons other than their illness. It results in a high demand for effective and safe contraceptive methods for such patients.

On account of possible adverse effects of birth control, in particular hormonal contraceptives, it is vital to assess the ovarian reserve of the female cancer survivors. According to the latest reports, the anti-Müllerian hormone (AMH) levels, determined on the 5-7th day of the menstrual cycle, are the best predictive markers for such assessment [5], while the popular methods, such as FSH or estradiol level measurements or the antral follicle count, are not helpful in this respect.

Contraceptive methods currently registered and available in Poland can be divided into five types:

1. Behavioral methods
2. Barrier methods
3. Estrogen and progestin containing methods
4. Progestin-only methods
5. Intrauterine devices (IUDs)

Due to low effectiveness of behavioral and barrier methods (Pearl index 15 and 27, respectively), they are not recommended as the method of choice [6]. Among birth control methods available in Poland, intrauterine devices, both non-hormonal and levonorgestrel-releasing ones, have the highest effectiveness determined with the Pearl index. Methods containing estrogens and progestins or only progestins have slightly lower effectiveness (Pearl index – 0.3-0.8).

Lately it has been suggested that, on account of the prolonged time of contraception used by female cancer survivors, its effectiveness should be assessed as a cumulated failure rate in a longer time unit, rather than, as to date, as a failure rate in a year of use.

Highly effective reversible contraception

1. Intrauterine device (IUD)

The analysis of a five-year failure rate shows that the failure rate of intrauterine devices is 0.5% for the levonorgestrel-releasing intrauterine devices and 1% for non-hormonal intrauterine devices [7].

High level of effectiveness and full reversibility of this contraceptive method, as well as the possibility to perform all

imaging scans (including CT and MRI), makes it particularly applicable to cancer patients and survivors, also those who have never given birth [8]. In addition, the coexistence of cancer and other illnesses and risk factors (e.g. thromboembolic disease, nicotine, obesity) increase the scope of applicability of the IUDs in comparison to other methods of birth control.

Reduced menstrual bleeding is an additional advantage of the levonorgestrel-releasing intrauterine devices. Owing to that, blood parameters do not worsen, which cannot be disregarded during cancer treatment.

Low percentage of infections upon insertion of the IUD also allows for its application in patients after immunosuppressive therapy. As shown in a study performed by the WHO, the percentage of intrauterine infections in such patients is comparable to the group of patients not treated with immunosuppressants [9].

Another aspect of the IUDs is their applicability in hormone-dependent breast cancer survivors. During the use of levonorgestrel-releasing intrauterine devices, detectable serum of levonorgestrel was found in patient blood, which raised general concern over the applicability of this method [10]. In their cohort study, Trinh et al., have not determined a higher number of breast cancer relapses in patients using the levonorgestrel-releasing intrauterine devices [11]. In a detailed analysis the investigators selected a group of patients who had already been using hormonal IUD when they were diagnosed with breast cancer. The risk of relapse in these patients turned out to be higher, although not statistically significantly. Despite a slightly higher risk of relapse, the application of levonorgestrel-releasing IUDs in patients undergoing Tamoxifen treatment constitutes a significant protection factor against pathological endometrial hyperplasia [12]. However, the use of the hormonal IUD has not been proven to prevent endometrial cancer in patients using Tamoxifen chronically [13].

2. Oral hormonal contraceptives.

Monophasic, biphasic and triphasic oral contraceptives (OC) have been administered mainly to young women and nulliparae. However, high effectiveness of this contraceptive method is accompanied by many adverse effects and restricted applicability. Its advantageous effects are mainly related to ovulation suppression mechanisms, antiandrogenic and anticancerogenic effects of many drugs [14, 15].

Hormonal contraceptives have been proven to reduce the risk of ovarian cancer, endometrial cancer and colorectal cancer [16].

Most studies that can be referenced indicate a slight connection between such contraceptives and the development of hormone-dependent breast cancer and its treatment. A small number of studies report an increased rate of breast cancer incidence [17, 18].

Unlike IUDs with levonorgestrel, OCs used during the diagnostic process of malignant breast tumors do not affect the prognosis or the course of disease adversely [19]. However, there is no unified viewpoint concerning the applicability of OCs in patients after breast cancer treatment.

Hormonal contraceptives are not recommended for front-line patients diagnosed with hormone-dependent cancer, including hormone-dependent breast cancer [9]. Moreover, drugs containing estrogens increase the already high risk of the thromboembolic disease for patients diagnosed with cancer [20].

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Contraceptive method	Example	Influence on cancer	Pros	Cons	Number of pregnancies in the first year per 100 women, based on typical use	Number of pregnancies in the first year per 100 women, based on perfect use
Intrauterine device	Cooper 380A	-lowers the risk of endometrial cancer -does not contain hormones	-reversible -effective for 10-20 years	-inserted by an experienced person -heavy bleeding -more painful cramps	0.8	0.6
	Mirena (levonorgestrel)	-lowers the risk of endometrial cancer - should be used with care in breast cancer patients	-reversible -effective for 5-7 years -reduces bleeding	-irregular cycles	0.2	0.2
Hormonal, progestogen-only contraceptives	Implanon (an implant)	-lowers the risk of ovarian cancer	-effective for 3 years	-requires skin incision during insertion and removal -irregular cycles	0.05	0.05
	Depo-Provera	-lowers the risk of ovarian cancer -temporary decrease in mineral density of bones	-effective for 3 months	-requires injection -irregular cycles -may cause delayed return to fertility	3	0.3
Hormonal, estrogen-containing contraceptives	The mini-pill	-lowers the risk of ovarian cancer		-daily use -irregular cycles	8	0.3
	Birth control pills	-lowers the risk of ovarian cancer -increases the risk of breast cancer -increases the risk of thrombosis	-regular cycles -large number of generics	-daily use	8	0.3
	Patches	-lowers the risk of ovarian cancer -increases the risk of breast cancer -increases the risk of thrombosis	-once-a-week use -regular cycles		8	0.3
	Nuva-Ring	-lowers the risk of ovarian cancer -increases the risk of breast cancer -increases the risk of thrombosis	-once-a-month use -regular cycles		8	0.3
Barrier methods	Condom	-protection against HPV and cervical cancer	-no prescription -protection against infections		15	2
	Diaphragms		-no prescription		16	6
	Spermicidal jellies and foams		-no prescription		16-32	9-20
Emergency	Escapelle	-does not increase the risk of thrombosis			?	used <72h from the intercourse lowers the risk by 75%
Natural methods					27	3-5

Hormonal contraceptives have been shown to reduce the risk of ovarian cancer in the general population and in BRCA mutation carriers [22,23]. A large study has demonstrated no correlation between breast cancer incidence in BRCA mutation carriers using low-dose oral contraceptives comparing to non-carriers using the same drug [24]. OC use may even decrease the risk for early onset breast cancer in BRCA 1 population. Unfortunately, there are no data regarding the impact of OC formulations and the effect on cancer risk in BRCA mutation carriers, although low-dose OC should be recommended to these women. OC should not be prescribed to breast cancer survivors with BRCA mutations, to whom barrier methods or IUD devices can be advised.

Emergency contraception

Women choosing barrier and/or natural behavioral methods of birth control should be informed that they may use the so-called emergency contraception. In cases where there are absolute contraindications to hormonal contraception, it is worth considering the IUD insertion. The effectiveness of this procedure has been assessed as high and preventing implantation up to 7 days after an unprotected intercourse.

Conclusions

Birth control is a significant factor that cannot be disregarded by women after cancer treatment. The intrauterine device is a highly reliable, long-lasting, reversible and, most of all, cheap method for hormone-dependent cancer survivors who would like an effective contraception method, while a levonorgestrel-releasing intrauterine device is a recommended method for women undergoing Tamoxifen treatment.

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