POSTPARTUM HORMONAL CONTRACEPTION REVIEW

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Abstract: *family planning and contraception after childbirth are important medical and social tasks, the solution of which will ensure reproductive health and full pre-conception preparation, uncomplicated course of subsequent pregnancy and childbirth, the birth of healthy offspring and prevent the onset of unwanted pregnancies. The main goals of postpartum family planning are: the optimal interval between childbirth and subsequent pregnancy (at least 2-3 years), reduction of maternal risks, perinatal and child morbidity and mortality, the number of medical abortions - all this dictates the need to choose the optimal method of contraception for a couple. The article presents modern ideas about the methods of postpartum contraception, starting with traditional (lactational amenorrhea, barrier contraception, calendar method) and ending with modern hormonal methods. Despite the relative conservatism in matters of postpartum contraception due to the possible influence of hormonal drugs on the fetus during breastfeeding, the world is actively looking for highly effective methods of long-acting reversible contraception immediately after childbirth, primarily intrauterine systems and implants.*

Keywords: *contraception, hormonal contraceptives, postpartum period, breastfeeding.*

ОБЗОР ПО ПОСЛЕРОДОВОЙ ГОРМОНАЛЬНОЙ КОНТРАЦЕПЦИИ

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Аннотация: *планирование семьи и контрацепция после родов являются важными медико-социальными задачами, решение которых обеспечит репродуктивное здоровье и полноценную предзачатную подготовку, неосложненное течение последующей беременности и родов, рождение здорового потомства и предотвратит наступление нежелательной беременности. Основными целями послеродового планирования семьи являются: оптимальный интервал между родами и последующей беременностью (не менее 2-3 лет), снижение материнских рисков, перинатальной и детской заболеваемости и смертности, количества медицинских абортов - все это диктует необходимость выбрать оптимальный метод контрацепции для пары. В статье представлены современные представления о методах послеродовой контрацепции, начиная с традиционных (лактационная аменорея, барьерная контрацепция, календарный метод) и заканчивая современными гормональными методами. Несмотря на относительный консерватизм в вопросах послеродовой контрацепции из-за возможного влияния гормональных препаратов на плод при грудном вскармливании, в мире активно ведется поиск высокоэффективных методов обратимой контрацепции длительного действия сразу после родов, прежде всего внутриматочных систем и имплантатов.*
Ключевые слова: *контрацепция, гормональные контрацептивы, послеродовой период, грудное вскармливание.*

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Introduction. The problem of family planning and contraception after childbirth is important in medical and social aspects [1]. It has been shown that when the interval between childbirth and subsequent pregnancy is more than 2 years, maternal mortality decreases by 32%, and infant mortality - by 10%; postpartum family planning can reduce the frequency of medical abortions by 90% [2]. The onset of pregnancy within a year after childbirth is accompanied by a significant increase in the risk of gestational complications: spontaneous abortion, premature birth, placental insufficiency, fetal growth retardation

syndrome [3]. The risk of infant mortality under the age of 5 years is maximum in the case of an interval between childbirth and subsequent pregnancy of less than 12 months, decreases by 13% with an interval of 24 months, and by 25% with an interval of 36 months [4].

According to a demographic analysis conducted in 27 countries, 95% of women after childbirth (from 0 to 12 months) would like to avoid pregnancy in the next 24 months, but 70% of these women do not use any method of contraception [5]. According to the data of Russian authors, only 48% of women after a cesarean section are planning subsequent childbirth, and 69% of patients want to endure the optimal interval between cesarean sections, which is 3 years [6]. Ovulation and the onset of pregnancy are possible before the menstrual cycle is restored, which, unfortunately, is not known to all women in childbirth. Effective and safe methods of contraception allow not only to prevent unplanned pregnancy and its termination, but also make it possible to fully restore the mother's body after childbirth and conduct the necessary pre-conception preparation. In some cases, during breastfeeding, various methods of contraception are combined, which requires postnatal counseling of puerperas. When artificially feeding an infant, the choice of contraceptive method is not limited and is determined by the woman's preferences.

Postpartum contraception methods. Abstinence (abstinence) is a method with 100% effectiveness, which excludes any effect on breastfeeding, but in married couples it is usually used for a short time after natural childbirth or operative delivery.

The method of lactational amenorrhea is a natural method of contraception based on the suppression of ovulation by the hormone prolactin, which stimulates lactation. This method is effective if lactation is accompanied by amenorrhea, and is also complete without the use of supplements, is performed in the “on demand” mode of the child with optimal breaks between feedings no more than 4 hours during the day and 6 hours at night. The method is effective in the first 6 months. after childbirth [9]. If at least one of these conditions is not met, it is necessary to use other methods of contraception [10].

The method of lactational amenorrhea has the following important advantages: easy to use; does not adversely affect the health of the mother and child; serves as the prevention of postpartum complications; has no contraindications; not associated with sexual intercourse. The disadvantages of this method include: limited efficiency (only with strict observance of the rules of breastfeeding); lack of protection against sexually transmitted diseases; the need to combine this method with other methods of contraception with a decrease in the amount of milk and the introduction of supplementary feeding [11].

Barrier methods of contraception include the use of a condom, diaphragm or cap, and spermicides. The main advantage of using a condom is protection against sexually transmitted infections, in addition, the method is easy to use,

does not affect lactation and the health of the baby, can be used immediately after childbirth and be combined with other methods (for example, the calendar method). The diaphragm and the cap are inserted 20-30 minutes before intercourse, they prevent the penetration of sperm into the cervical canal, however, the use of these barrier contraception is possible only at the end of the postpartum period (6 weeks after delivery), with the obligatory determination of the required size. In combination with lactational amenorrhea, the effectiveness of the method increases to 80-90% [12].

Methods of hormonal contraception in the postpartum period include the use of gestagen-containing and combined estrogen-progestogen drugs. The contraceptive effect of drugs containing pure gestagens is based on a decrease in the amount and an increase in the viscosity of cervical mucus (which prevents sperm from entering the uterus). Combined hormonal contraceptives containing estrogens and gestagens inhibit the growth and maturation of follicles, prevent ovulation and embryo implantation [13].

There are conflicting reports of the effect of hormonal contraceptives on the amount of breast milk. If earlier studies reported a 12% decrease in lactation when prescribing gestagen-containing oral contraceptives compared with placebo and a 41.9% decrease in breast milk production in mothers after 6 weeks. taking combined oral contraceptives (COCs) [14], then in a recent controlled randomized study conducted among lactating women after 42 days of the postpartum period (in different groups were used: COCs containing 150 mcg levonorgestrel and 30 mcg ethinyl estradiol; intrauterine therapeutic system with levonorgestrel; implant with etonogestrel; copper-containing intrauterine system), no pronounced negative effect on lactation was found [4, 15]. However, patients are advised to warn about the possibility of reducing lactation when using hormonal contraceptives, especially when they start using them in the first months after childbirth [16]. Gestagen-containing drugs (pure progestogens). Preparations containing only progestogens include oral contraceptives - pills or mini-pills, and prolonged-acting progestogens. Theoretically, it is inappropriate to start taking gestagens in the first 48 hours after childbirth, since a decrease in the level of progesterone is one of the pathogenetic mechanisms of lactogenesis [17].

Mini-pills do not adversely affect the quality, quantity of breast milk and duration of lactation, as well as the health of the mother and baby. The ability to conceive is restored immediately after discontinuation of the drug. The contraceptive effect decreases when the drug is not taken, as well as when some antibiotics, anticonvulsants and sedatives are taken, which requires the use of additional methods of contraception. Sustained-release progestogens include injectable contraceptives and hormonal implants. Injectable contraceptives (for example, depot of medroxyprogesterone acetate, DMPA) are a solution containing a gestagen, when administered intramuscularly, a depot of the drug is created that provides contraception for 8-12 weeks. Review by E.A. Brownell et

al. (2012) early prospective studies of the use of DMPA after childbirth, according to which the drug has no effect on fetal weight, quantity and quality of breast milk, as well as the need for supplementation, indicates methodological errors in these studies [19].

Gestagen-containing implants in the form of capsules are injected into the forearm area subcutaneously, the hormone is released at a constant rate for 5 years, after which the contraceptive effect decreases sharply. Implant capsules can be silastic (to be removed if necessary or after 5 years) and biodegradable, which are destroyed by the action of body enzymes. The restoration of the menstrual cycle and the ability to conceive occurs within a year after the termination of contraception. The effectiveness of long-acting progestogens is 99%. It is possible to insert implants directly on the first day after childbirth [22]. In a study by M.B. Brito et al. a comparison was made between the use of an etonogestrellizing implant, administered 1–2 days after delivery, and a depot of medroxyprogesterone acetate, which was administered 6 weeks later. postpartum period. Newborn mothers with implants showed a tendency towards greater weight gain in the first 6 weeks, but the average duration of exclusive breastfeeding did not differ statistically significantly [20].

In a study by S.E. Gurtcheff et al. compared the effect of the implant on breastfeeding and the condition of infants with its early (1-3 days after birth) and delayed introduction (4-8 weeks), no statistically significant differences in the duration of breastfeeding, the amount of milk and the growth of children were found [14]. Combined estrogen-gestagenic drugs. After the termination of breastfeeding, as well as if the woman did not breastfeed at all, it is recommended to switch to combined preparations containing estrogens and gestagens. These include: COCs taken daily in monthly cycles, prolonged cycles or in continuous mode; transdermal patches (applied weekly); combined contraceptive vaginal rings (applied monthly). Estrogens affect the quantity and quality of breast milk, and reduce the duration of lactation. The ability of estrogens to reduce the production of breast milk is confirmed by the historical use of large doses of estrogens immediately after childbirth in order to suppress lactation, but there is evidence of a high risk of thrombotic complications during this period [15]. The Cochrane Review of Lactation Suppression Methods presents the results of 7 studies using various estrogen-containing drugs that significantly reduce lactation within 7 days of the postpartum period [16].

The 2010 systematic review of prescribing COCs for breastfeeding included only 3 randomized controlled and 4 observational studies. In 3 randomized controlled trials, a decrease in the average duration of breastfeeding in women using COCs and a decrease in the amount of breast milk (the need for supplementation) have been shown. No other negative impact on children's health has been identified [17]. When prescribing estrogen-containing drugs, it is necessary to exclude the presence of contraindications in a woman (history of thromboembolism, hormone-dependent tumors, progressive liver disease, sickle

cell anemia, cerebrovascular diseases, myocardial infarction and coronary artery disease) and identify risk factors (past thrombosis and thromboembolism) liver function, hepatitis, gallbladder disease, chronic arterial hypertension, diabetes mellitus, epilepsy, ulcerative colitis, allergic reactions, uterine fibroids, chronic kidney disease). Comparison of pure progestational contraceptives and COCs.

In a recent study, comparing 63 mothers who received gestagen-containing drugs (35 μg of gestagen) and 64 mothers who received COC (35 μg ethinylestradiol) from 2 to 8 weeks. postpartum, the authors did not find significant differences in the number of women who continued breastfeeding after 8 weeks. after childbirth (63.5% when prescribing gestagens versus 64.1% when prescribing COCs). In the group receiving gestagens, 44% of those who retained lactation soon stopped breastfeeding due to constant insufficient lactation, this figure in the group receiving COCs was 55%. In the group with pure gestagens, 23% of women and 21% of women in the group with COCs, on the contrary, stopped taking contraceptives due to the negative effect of drugs on breast milk production [19].

Emergency contraception is used after casual sex, rape, damage to the condom or violation of the COC regime. Emergency contraception is effective for 72 hours, up to 120 hours after unprotected intercourse. As an emergency contraception, you can use: - COCs in high dosage; preparations containing only gestagen, where the active substance is also contained in a high dosage (levonorgestrel 750 mcg); - progesterone antagonists, which interrupt ovulation and induce menstrual-like discharge; - emergency introduction of an intrauterine contraceptive (IUD). Postcoital placement of a copper-bearing IUD has no effect on lactation, while it has the benefits of ongoing contraception. It has been shown that drugs containing levonorgestrel are more effective than COCs and less likely to cause nausea and vomiting [20]. In addition, theoretically, preparations containing levonorgestrel have a lesser effect on lactation. In a pharmacological study of 12 lactating women, it was found that after the mother took 1.5 mg of levonorgestrel, the expected effect on the child was 1.6 μg per day of taking the drug [21]. In the only observational study comparing the use of pure progestogens and estrogen-containing drugs for postcoital contraception, the absence of a pronounced side effect of both groups of drugs on breastfeeding was shown [22].

Given the similar efficacy of the drugs, the lower incidence of nausea and vomiting, and the absence of the negative effects of estrogen, the use of levonorgestrel for emergency contraception in lactating women is preferable to the use of COCs.

Intrauterine systems are one of the most commonly used methods of contraception in the world. The frequency of their use in the United States is 6%, in other countries it reaches 80% of all methods of contraception [14].

Hormonal and non-hormonal intrauterine systems (IUDs) are available and have a variety of side effects. The use of a progestin-releasing IUD leads to a

decrease in menstrual blood loss, although acyclic bleeding may occur during the initial period after insertion. This side effect is usually seen in the first 6 months. and eventually passes. The use of copper IUDs is often associated with menstrual irregularities [15]. In a comparative randomized study of the effect on breastfeeding of gestagen- or copper-containing IUDs inserted after 6-8 weeks. after childbirth, the authors found no differences in the duration of breastfeeding, child growth and development within 1 year after childbirth [20]. However, a comparative analysis of the use of a levonorgestrel-containing IUD immediately after delivery and after 6-8 weeks. after childbirth showed that with the early introduction of the IUD, the duration of breastfeeding was shorter [17].

Currently, many foreign works investigate the use of highly effective methods of long-acting reversible contraception immediately after childbirth, primarily IUDs and implants, which requires antenatal counseling of patients regarding the entire spectrum of available contraceptive options with an emphasis on LARC methods and addressing this issue immediately after delivery [18-20]. However, to date, the use of the method has many limitations and obstacles, including financial (cost of the drug, availability immediately after childbirth, antenatal counseling, training of staff at maternity hospitals) [20].

A systematic review of 18 studies on the postpartum use of a levonorgestrel-releasing IUD has shown that its use within 48 hours of delivery is a safe method of contraception [12]. However, the frequency of expulsion with the introduction of the IUD immediately after the birth of the placenta or in the interval up to 48 hours after childbirth is higher than with the introduction after 4-6 weeks. after childbirth. The insertion of a levonorg-arrow-bearing IUD during cesarean section is associated with a lower expulsion rate compared to insertion during vaginal delivery [2]. A recent systematic review has shown that intrauterine contraception is the optimal LARC option for lactating women after caesarean section [3].

Surgical sterilization (female and male) is a method of irreversible contraception, in which ligation, transection, clamping or occlusion of the fallopian tubes (in women) or ligation of the vas deferens (in men) are performed surgically. Medical sterilization as a method of contraception is carried out in accordance with the legislation of the Russian Federation on the protection of public health [16]. Female sterilization is performed during operative delivery or after delivery at the request of the woman using various surgical techniques and anesthesia (ligation and transection of the fallopian tubes during cesarean section, laparoscopic tubal ligation, hysteroscopic occlusion of the fallopian tubes) [19]. The effectiveness of the method is 100%.

The natural (calendar) method of family planning is based on periodic abstinence on fertile days and can only be used with a regular menstrual cycle. So, the ovulatory method (Billings) is usually not recommended for use after childbirth, since it is difficult to determine the timing of ovulation and the first

menstruation. The effectiveness of the method is no more than 50% if it is performed correctly, the method requires special consultation of the couple [19].

Below are the guidelines for choosing the best method of contraception after childbirth.

Conclusion. During breastfeeding, a woman's needs for nutrients naturally increase, a lack of vitamins and minerals reduces milk production and worsens its quality. When prescribing hormonal methods of contraception after childbirth, their effect on metabolic processes should be taken into account, in particular, progestogens reduce the number of estrogen receptors in tissues, can affect the activity of liver enzymes dependent on cytochrome P-450, which affects the activity of a number of metabolic processes in the body [1]. One of the metabolic effects of hormonal contraceptives is a negative effect on carbohydrate metabolism - an increase in insulin resistance. When taking hormonal contraceptives, the content of vitamins and trace elements in the blood changes: the levels of riboflavin (B_2), pyridoxine (B_6), cyanocobalamin (B_{12}) and zinc decrease. In addition, while taking contraceptive drugs, the body is exposed to increased oxidative stress. Therefore, during lactation, especially when using hormonal methods of contraception, it is necessary to prescribe vitamin-mineral complexes.

Currently, the number of mothers exclusively focused on breastfeeding is increasing. It is necessary in modern conditions to assess the effectiveness of the method of lactational amenorrhea in large populations. There is a need for more detailed prospective studies on the effects of modern hormonal contraceptives on breastfeeding in the short term and the possible effects of exogenous hormones on the baby in the long term. Consideration should be given to the critical importance of breastfeeding and the possible negative effect of hormonal contraception on milk supply, especially when hormonal contraception is initiated early after childbirth. Attention should be paid to both antenatal and postnatal counseling, the information obtained will enable women to make informed decisions about the risk of an unplanned pregnancy, the choice of contraceptive method and the risk of breastfeeding disorders.

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