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THE USE OF CRYODESTRUCTION METHOD IN THE TREATMENT OF CERVICAL DISEASES IN WOMEN OF REPRODUCTIVE AGE

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Abstract: An important issue remains the choice of various methods for treating cervical pathology and their impact on the course and outcome of pregnancy, since the prevalence of cervical pathology in women of reproductive age is increasing every year, reaching, according to various authors, 12-20%. The issue of developing and applying modern methods for treating cervical pathology that do not negatively affect women's reproductive health remains unresolved, despite advances in the prevention, diagnosis, and treatment of cervical conditions, which necessitates the continued search for a solution to this problem. The opinions of various authors regarding the impact of using cryodestruction in the treatment of cervical pathology on the course of pregnancy and childbirth are divided. Some authors believe that it does not lead to serious complications during pregnancy and labor, while others note an adverse effect of these procedures on the course of the gestational period.

Keywords: cryodestruction, cervical diseases, treatment, cryotherapy

Over the past decade, a top approach for treating various cervical conditions has been using extremely low temperatures. The cryodestruction method is based on applying cold locally for therapeutic purposes. Essentially, the tissues that need to be removed are destroyed through freezing. Cryodestruction is used to remove papillomas, condylomas, warts, and other growths. It's especially commonly used for treating cervical pseudo-erosions and low-risk dysplasias. In most cases, cryodestruction is preferred over other surgical methods for treating cervical issues because it’s considered organ-preserving. It’s viewed as the most natural way to destroy biological tissue. Another plus is that it doesn’t cause thermal denaturation of proteins or nucleic acids during the procedure. Tissue destruction in this case is associated with changes occurring in the intra- and extracellular fluids [1,3]. According to V.I. Kochenov, cryotherapy should be classified as a radical method of treatment in the presence of surgical consequences of its use. The cryodestruction method combines radical therapy for underlying and precancerous processes while stimulating the regenerative properties of tissues [4,6].

The main mechanism of cryodestruction is the instant cooling of tissues to ultra-low temperatures. This leads to the simultaneous freezing of extracellular and intracellular fluids. Next, microcrystals of ice form, accompanied by a further increase in the concentration of cellular toxins to a maximum level. All of this leads to disruption of membrane and cellular structures, accompanied by a cessation of protoplasmic movements in the tissue being affected. It should be noted that the faster the cryodestruction process is carried out, the more effective the destruction of the affected tissue. At the same time, due to changes in the microcirculatory system, bleeding does not occur, as the cryodestruction process has a hemostatic effect.

The average duration of cervical cryodestruction is from 30 seconds to 2 minutes.

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One of the advantages of the cryodestruction procedure is the ability to select an appropriate tip depending on the size and location of the lesion, as well as to adjust the duration of exposure. Additionally, cervical cryodestruction can be performed repeatedly [3, 5]. These properties serve as a basis for the broader use of the cervical cryodestruction method in various pathological conditions of the cervix. The most important advantages of using the cryodestruction method are considered to be the absence of bleeding, relative painlessness of the cryogenic method, and the low cost of equipment. Cervical cryodestruction does not lead to sclerotic deformities of the cervix, which ensures the absence of adverse effects on women's reproductive function [3, 8, 10].
In order to overcome the difficulty associated with the need to destroy the lesion while preserving the surrounding healthy tissues, the 'freeze–thaw' scheme has gained wide application. The treated lesion is characterized by a zonal nature – zones of cryonecrosis, freezing, hypothermia. During the cervical cryodestruction procedure, the affected area must be frozen deeper and larger than its actual size.

The main drawbacks of the cryosurgical method for treating pathological conditions of the cervix are:
- the wound heals more slowly in the postoperative period;
- due to the lack of information regarding the depth of cryogenic effect, there are various difficulties in dosing the cryogenic treatment;
- the biggest disadvantage of using the method of cervical cryodestruction is the inability to obtain biological material for a definitive diagnosis;
- after cryotherapy, recurrence of the pathological condition, particularly neoplasia, occurs quite frequently, reaching up to 20%;
- despite the relatively gentle effect of freezing on the structure of cervical tissues, the "coagulated" cervix syndrome occurs in 11% of patients [8, 9].

The choice of tip and the regimen for performing cervical cryodestruction depends on the extent and severity of the pathological process, as well as the selected strategy of the specific gynecologist..
Despite the fairly long and widespread use of cryodestruction in the treatment of pathological conditions of the cervix, opinions among researchers regarding the effects of cryotherapy in history on the course and outcome of labor vary. Most authors note the absence of adverse effects on pregnancy and childbirth, but there are also those who associate cervical cryodestruction with the development of various obstetric complications. The term "cryosurgery" or "cryotherapy" originates from the Greek word "krios," which literally translates as "frost" or "ice-cold." This method is considered one of the technically simplest techniques used in treating pathological conditions of the cervix. The main mechanism of this destructive method is the local freezing of the cervical pathology site using refrigerants such as carbon dioxide, nitrous oxide, or liquid nitrogen [13, 46].

- The main advantages of using cryodestruction in practical medical practice are as follows:

- Minimal perifocal reaction of the surrounding tissues, as there is a clear local limitation of the pathological focus being destroyed;
- No damage occurs to healthy tissues neighboring the focus of cryodestruction, since the effect is entirely focal in nature;

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- Reduction of pain due to the destruction of nerve endings during freezing, i.e., cryonecrosis occurs;
- Absence of bleeding during cryodestruction;
- After complete thawing of tissues, normal blood flow is restored due to the high resistance of large vessel walls to low temperatures;
- The dose of cryotherapy is determined individually by the doctor for each specific case;
- Regeneration of tissues subjected to cryodestruction occurs in full.

• Absence of coarse structural scars on the cervix after freezing;

• During cryodestruction, immunoreactive functions are activated, which ensures more harmless healing of the destruction site;

• A relatively low incidence of various complications compared to other methods [1,3, 9, 10]. The immunostimulatory effect is one of the most important effects of cryotherapy. Tissue subjected to cryodestruction continues to remain in contact with the whole body, leading to stimulation of humoral immunity with activation of antiviral, antifungal, and antitumor immunity [3, 6]. The method of cervical cryodestruction combines surgical radicalism in treating pathological conditions of the cervix with subsequent stimulation of regeneration of the tissues subjected to destruction.

During cervical cryodestruction, normalization of the menstrual cycle often occurs, along with the elimination of heavy cervical discharge from the vagina. Cryodestruction also positively affects the elimination of cervical factor infertility[2,4,8].

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