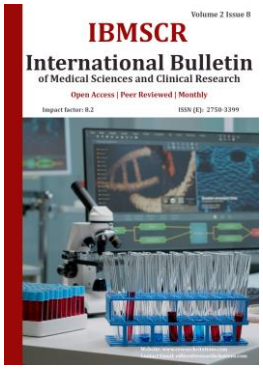

A MODERN VIEW ON THE TREATMENT OF CONDILOMAS.

Saipova N.S.
F.B.Mirodilova
S.S.Akhmadkulova
F.Kh.Abboskhonova
Tashkent Medical Academy.
https://doi.org/10.5281/zenodo.8036312

Condylomas are growths of the epithelium that form on the vulva and skin of the perineum (perianal area) as a result of infection with the human papillomavirus (HPV). Other names are also used to refer to this disease: viral papillomas, genital warts, genital warts. The main route of infection transmission is sexual.

Cause of genital warts

More than 100 types of HPV have been found, of which approximately 40 are sexually transmitted, but in people with intact immunity, genital warts are predominantly caused by HPV types 6 and 11. Other viruses in this family cause warts on the face, warts on the hands, and warts on the soles of the feet, which are not related to warts.

Most HPV infections are asymptomatic and go undiagnosed. At the same time, HPV infection is the most common sexually transmitted disease (STD) in developed countries. The lifetime risk of contracting HPV reaches 80%. Among men and women aged 18–49 who are sexually active, 1% are diagnosed with warts. Using DNA research methods, HPV DNA is detected in 50-60% of women aged 18-25 years, but only 10-15% of them develop warts during their lifetime. They occur when infected with both oncogenic (capable of causing a malignant disease) and non-oncogenic types of HPV. However, their appearance, as already mentioned, is most often due to non-oncogenic HPV types 6 and 11 (the virus of these types does not cause squamous cell carcinoma). Oncogenic HPV types 16, 18, 31, 33 and 35 mediate the development of precancerous diseases of the genital organs and squamous cell carcinoma of the vulva, cervix, anus and skin of the perianal region. The risk of infection in the presence of genital warts in a sexual partner is high and is approximately 75%. Other risk factors for HPV infection include beginning sexual activity at an early age, having sex with many partners without a condom, having an STD, having sex with an unknown partner.

The incubation period for genital warts ranges from 3 weeks to 8 months, with an average of 2-3 months. Sometimes HPV remains in the body in a latent state (without causing the growth of genital warts) for a number of years, and in some cases, throughout a person's life. Its periodic activation contributes to a decrease in the body's defenses.

Symptoms of genital warts

Most often, condylomas are localized in places most prone to traumatic damage during sexual intercourse.

In women, the large and small labia, the posterior commissure of the lips are affected, less often - the walls of the vagina and the cervix. Isolated lesions of the cervix are extremely rare.

During oral and anal intercourse, the oropharynx and anal canal are affected. In addition to these localizations, the external opening of the urethra may also be affected.

In men, warts are localized on the foreskin, head and neck of the glans penis, in the region of the external opening of the urethra, and sometimes in the canal itself. The defeat of the perianal region is typical for homosexuals, but also occurs in men with a heterosexual orientation.

In appearance, four forms of genital warts are distinguished: genital, keratinizing, papular and flat. Usually condylomas are not single, so they often talk about "condylomatosis", emphasizing the multiple nature of their growth. On the mucous membranes, the rash looks like soft, really pointed papules (formations without a cavity, rising above the surface of the skin) on a stalk or, less often, on a wide base. The leg has the appearance of an elongated formation through which the vessels pass.

At first, the papules are very small, then increase in size, and sometimes merge into large tumor-like formations of irregular shape, resembling cauliflower or cockscombs on a base narrowed in the form of a leg. The appearance of genital warts often depends on their location. Usually on the external genitalia they look like dense papules, sometimes with filiform outgrowths on the surface (keratinization areas). In the inguinal regions and the gluteal fold, papules have an uneven surface and rise above the surface of the skin. Due to constant friction, they are damaged, wet, a secondary infection may join and an unpleasant odor may appear, as well as bleeding.

On the skin of the vulva, condylomas are whitish or acquire a brown tint, on the mucous membranes they are pale pink or reddish. Patients complain of itching, mild pain, a feeling of irritation of the skin of the vulva, difficulty walking and sexual intercourse. After the diagnosis of condylomas, many women are afraid of infecting others, they are afraid of relapses after treatment, they are afraid to confess to their sexual partner. As a result, their sexual behavior changes, depression may develop.

Particularly severe condylomas occur in patients with diabetes mellitus, pregnant women and in patients receiving immunosuppressive therapy (after organ transplantation or for malignant tumors). As immunodeficiency increases in HIV-infected people, warts grow rapidly, become multiple, and affect large areas of the skin and mucous membranes of the genitals.

Diagnosis of genital warts is not difficult. However, sometimes, at the preclinical stage, they are difficult to identify. In such cases, suspicious areas are treated with a solution of acetic acid.

After 5–10 minutes, the genitals are examined under a magnifying glass (x10) or with a colposcope. Warts turn white and can be recognized against the background of normal skin or pink mucous membranes.

When genital warts are detected, a cytological examination of a smear from the cervix (oncocytology), colposcopy, and targeted biopsy are performed according to indications to exclude concomitant dysplasia and cancer of the vulva or cervix. There was no clear correlation between the results of a cytological examination of a cervical smear and HPV DNA. In this regard, studies on DNA, RNA and the capsid protein of the virus in the absence of symptoms of infection are rarely performed.

Warts must be distinguished from wide warts, which are a manifestation of secondary syphilis. Blood tests for syphilis help with this.

Examination for genital warts necessarily includes studies for gonorrhea and chlamydia, blood for syphilis and HIV. This is because STDs are often combined with each other, and sometimes have common symptoms.

Treatment of genital warts

Treatment consists in the removal of genital warts and the elimination of associated symptoms. The effectiveness of most methods of removing genital warts is in the range of 60 to 70%, the recurrence rate exceeds 25%. Antiviral drugs are ineffective. The following methods are used to remove genital warts: cryodestruction, application of cauterizing agents and antitumor drugs (5-fluorouracil), electrocoagulation, surgical treatment, laser destruction, interferon. The choice of removal method is determined by the localization and number of genital warts, the cost of treatment and, often, the experience of the doctor. It is important to consider the opinion of the patient. To do this, she explains the advantages and disadvantages of all existing methods of treatment.

Without treatment, there can be three outcomes:

- spontaneous resorption of genital warts (in 10-30% of patients with normal immunity, this occurs within 3 months)
- further growth
- persistence

The first outcome is confirmed by the observation of patients taking a placebo (the patient believes in the effectiveness of the drug, but does not know that he is taking a “pacifier” filled with an indifferent substance, such as lactose), - in 20–30% of them, warts disappear within 3 months.

Podophyllotoxin (Condilin) is applied to warts 2 times a day for 3 days, then a break is taken for 4 days; in total, up to 4 such courses are carried out.

Imiquimod increases local production of interferons. Apply 5% cream 1 time per day 3 times a week, for a long time (up to 16 weeks), the effect occurs on average after 2 months. about 40% of men and 75% of women. Imiquimod is not sold in Russia. If treatment cannot be carried out without the participation of a doctor, it begins with cryodestruction. Condylomas are also cauterized using trichloroacetic or dichloroacetic acid with a concentration of 80-90%. If necessary, the treatment is repeated after 1 week. If after 6 procedures there is no effect, you need to change the method of treatment. Trichloroacetic acid is used during pregnancy, as well as for the treatment of genital warts on the cervix. Interferon-2α (immunotherapy) is injected into the base of condyloma at a dose of 1 million units. 3 times a week. Recently, interferon preparations have been used to treat papillomatosis of the larynx, but the effectiveness is low.

There is evidence that during electrocoagulation and laser therapy, infection of medical personnel is possible, since the fumes generated during these procedures contain HPV, which can enter the mucous membranes of the respiratory tract.

It is important to remember that there are no methods for the complete eradication of HPV infection, you can only remove warts in order to alleviate the condition of patients. Removal of genital warts, if it reduces the risk of infection transmission, is insignificant. Therefore, examination and treatment of sexual partners is not necessary, but it is desirable in terms of identifying genital warts or other STDs in them. Relapses of the disease, which are observed on average 3 months after treatment, are due to the activation of a latent infection, but not re-

infection. This is due to the fact that both condylomas and externally unaltered adjacent skin contain millions of pathogens; the virus remains in the tissues surrounding the warts.

Warts and pregnancy

Pregnancy can accelerate the growth of genital warts. In some cases, they interfere with the birth of the fetus or cause vaginal ruptures, therefore, in such cases, a caesarean section is indicated. In a newborn, HPV infection can cause laryngeal papillomatosis (very rarely). If in adults it proceeds without complications, then in early childhood it is a life-threatening disease, which is manifested not only by hoarseness, but also by respiratory failure. Electrocoagulation, cryotherapy or laser therapy do not cause complications for the mother and fetus. Podophyllotoxin, imiquimod during pregnancy are contraindicated.

Remember that the removal of genital warts is most effective when they are small and the duration of the disease is not more than 1 year. The use of latex condoms reduces the risk of infection of sexual partners.

Warts and HPV vaccination

Girls and women aged 9 to 26 are currently being vaccinated with a quadrivalent vaccine (against HPV types 16,18, 6 and 11) called Gardasil, which protects against cervical cancer and warts. The second and third injections are given 2 and 6 months after the first. If you already have condylomas, then this vaccine will not cure them of warts.

The bivalent vaccine (against HPV types 16 and 18) against cervical cancer Cervarix is ineffective for the prevention of genital warts.

Before visiting a doctor, you should familiarize yourself with information about HPV and warts, make a list of accumulated questions in order to get the right answers to them and choose the most appropriate treatment method.

In the treatment of warts, we use not one method of removal, but several (liquid nitrogen, electrocoagulation, radioknife).

Genital warts (synonyms: condylomata acuminate, viral warts, genital warts, genital warts) are diseases caused by the human papillomavirus (HPV). HPV-associated diseases are among the most common contagious human viral infections. HPV is a small rounded double-stranded DNA virus with a diameter of 50 to 55 nm. To date, more than 80 HPV types have been described . Infections caused by HPV are highly specific for the epidermis, since HPV has a tropism for the epithelial cells of the skin and mucous membranes.

Genital warts are distinguished by high contagiousness. Infection occurs through contact, most often sexual. The virus can persist for a long time on infected objects. Entrance gates for the virus are small abrasions, cracks or abrasions. The virus can also be spread by autoinoculation. Non-compliance with personal hygiene, wearing tight underwear, maceration of folds in obese people, as well as immunodeficiency conditions contribute to the development of a lesion over a large area of the skin.

Over the past 20 years, there has been an increase in the incidence of genital warts. In the US, genital warts (or genital warts) are among the most common sexually transmitted diseases. The incidence of genital warts exceeds 106.5 cases per 100,000 US population, which is about 0.1% of the entire population [1].

Close attention to this disease is explained by the fact that some of the types of HPV that cause genital warts can lead to malignancy of the process. Types 16 and 18 are the most potentially dangerous. It is no coincidence that it is important to diagnose and treat genital

warts in a timely manner. Recurrence of genital warts is not always associated with re-infection, but may be caused by virus reactivation

Usually genital warts are localized on the genitals and in the perianal region. In HIV-infected patients, genital warts may appear in unusual places, such as the face, eyelids, and ears. In men, the most common localization is the penis, urethra, scrotum, perianal, anal, and rectal regions [2]. The elements of the rash are flesh-colored, can be represented by smooth papules the size of a pinhead, and at the initial stages of development are not always visible on the penis.

To identify them, a test is carried out with 5% acetic acid. After treatment of the skin, the color of the papules becomes whitish. In the future, the papules grow and become warty or filiform in shape, resembling a cauliflower or cockscomb. As a rule, genital warts are multiple and arranged in groups.

In women, the clinical picture of genital warts can be varied. Classical exophytic lesions on the external genitalia are common and easily detected during examination, but may also be incidental findings during colposcopy or sigmoidoscopy. On the labia minora and on the eve of the vagina, condylomas are moist, velvety or multiple finger-like growths and occupy a significant area. Condylomas in the cervical canal are found in 20% of women infected with HPV and with localization of genital warts on the external genitalia. Localization of genital warts on the cervix or in the cervical canal is considered an unfavorable factor, as it can contribute to the development of cervical cancer [3].

Even with timely and rational treatment, genital warts often recur. This is due to the fact that the virus can remain inactivated for a long time in apparently healthy areas of the skin and mucous membranes. Differential diagnosis of genital warts is carried out with secondary syphilis (general warts), molluscum contagiosum, bowenoid papulosis, brilliant lichen, lichen planus, angiokeratoma, angiofibroma on the coronal sulcus of the glans penis, folliculitis, soft fibroma, pilar cyst.

Diagnosis of genital warts, as a rule, is not clinically difficult. Additionally, in some cases, a test is carried out with 5% acetic acid. To do this, a medical napkin moistened with a solution is placed in the area of the alleged localization of genital warts for 5-10 minutes, after which the rash becomes whitish [4].

When establishing the diagnosis of genital warts, it is necessary to conduct an examination for syphilis and HIV infection.

A biopsy is indicated for those patients who have a suspicion of precancerous diseases or squamous cell carcinoma. Removal of genital warts does not reduce the risk of cervical cancer. Therefore, all women who have a history of genital warts should have an annual cytological examination of smears from the cervix in order to detect the oncological process in a timely manner.

Treatment and prevention The use of condoms reduces the risk of infection of sexual partners. It is impossible to completely remove HPV - you can only remove genital warts, alleviating the patient's condition and reducing the risk of infection of the sexual partner. There are several treatments for genital warts. All of them have certain disadvantages. Cryodestruction is one of the most commonly used methods of treatment. The affected surface is treated with liquid nitrogen using a cotton swab or spray. The treatment is repeated every 1–2 weeks until all genital warts are completely removed. The method rarely leads to scarring, it has a low cost. Cryosurgery can cause severe pain. It is not always possible to

simultaneously treat the entire affected surface. In some cases, after cryodestruction, hyperpigmentation or hypopigmentation may develop. Diathermocoagulation is a painful method of treatment and leaves behind persistent scars, therefore it is used only to remove single condylomas.

Laser removal is carried out using carbon dioxide and neodymium YAG lasers (yttrium aluminum garnet lasers). After removal, scars may remain.

Medical methods of treatment. Condilin (podophyllotoxin) - 0.5% solution in 3.5 ml vials with an applicator. The Podophyllotoxin component of Kondilin is the most active in the composition of the plant extract of podophyllin; when applied topically, it leads to necrosis and destruction of genital warts. The advantage of this method of treatment is that the patient can independently treat the affected skin in accessible places.

Using a plastic applicator, the drug is applied to condyloma; all warts are gradually wetted, but not more than 50 pieces at a time (over an area of \u200b\u200bno more than 10 cm2). The drug should be applied with caution, avoiding healthy areas of the skin. The first time the treatment is carried out by a doctor or nurse, teaching the patient how to properly apply the drug. After treatment, the preparation must dry so that irritation of the surrounding skin or its ulceration does not occur. Condilin is applied 2 times a day for 3 days, and then a 4-day break is taken. The duration of treatment should not exceed 5 weeks.

Solcoderm is a mixture of acids: 65% nitric, 98% acetic, as well as lactic and oxalic acids and copper nitrate; is issued in the form of solution (ampoules on 0,2 ml). After it is applied to the surface of the skin, it turns yellow, after which the treated tissues are mummified. Processing should be carried out by medical personnel. The drug is applied to the surface using a glass capillary or applicator, after which the drug must dry. It is allowed to process an area of no more than 4-5 cm2 at one time. If necessary, the treatment can be repeated after 4 weeks. The application of the drug may be accompanied by severe burning and pain, in some cases hyperpigmentation and scarring may occur.

Interferon preparations are injected directly into genital warts. The procedure is painful and requires re-treatment. Trichloroacetic acid at a concentration of 80-90% is applied directly to warts. Its residues are removed with talc or sodium bicarbonate. If necessary, the treatment is repeated with an interval of 1 week. If, after 6-fold treatment, genital warts remain, then it is necessary to change the method of treatment.

J. M. Handley and W. J. Dinsmore (1994), based on the literature data, as well as their own research, proposed a classification of clinical forms of HPV infection and associated diseases

The most significant is the impact of HPV-associated infections of the urogenital tract: urogenital chlamydia, mycoplasmosis, cytomegalovirus and herpetic infections, dysbiotic conditions. The result of their influence on the course of HPV infection is the chronization of the process, the formation of persistent, as a rule, non-specific inflammatory changes in the urogenital area, and significant difficulties in carrying out therapeutic measures. The significance of the presence of a concomitant infection for the treatment of condylomatosis is explained by the following circumstances. The presence of STDs associated with HPV infection lengthens the duration of treatment of the latter by an average of three times. In most cases, relapses are associated with the above reason. Epithelialization of cervical erosions after the destruction of warts can only be achieved if there is a preliminary scan for concomitant STDs and bacterial vaginosis.

The possibility of a relationship between cervical neoplasia and venereal disease has been discussed for many years. In the group of women suffering from invasive cervical cancer (CC), there was a higher incidence of nonspecific microflora, including trichomonas and gardnerella infections. Examples of such influence have been discussed in relation to Treponema pallidum, Neisseria gonorrhoeae, Chlamidia trachomatis, herpes simplex virus type 2, cytomegalovirus, human papillomavirus. Epidemiological studies have convincingly shown that an undeniable risk factor for the occurrence of precancerous changes and cervical cancer is genital HPV infection.

Principles of treatment for HPV infection

Given the fact that specific antiviral drugs and vaccines that act on HPV are not yet available, it is generally accepted that complete elimination of the virus from the body cannot be achieved. The goal of therapy is to eliminate clinical and subclinical forms of HPV infection.

To date, in the arsenal of practitioners there are many methods for removing anogenital warts. Their effectiveness varies from 30 to 90%, but none of the methods is a panacea, since the relapse rate is quite high with any treatment method.

In this case, the possibility of persistence of the virus in the absence of any clinical manifestations should always be taken into account.

Choosing the most optimal method in each specific case, it is necessary to be guided by four main characteristics:

effectiveness in this pathology;

relapse rate after treatment;

tolerability (minimum side effects);

ease of procedures.

In addition to the removal of anogenital warts, it is necessary to solve the following important tasks:

1. Identify and treat patients with anogenital warts (and their sexual partners) for other sexually transmitted diseases (STDs).

2. Screen all women with anogenital warts for cervical intraepithelial neoplasia (CVN) using cytology and colposcopy.

3. Support further monitoring of CVN foci in the early stages for the timely detection of their progression or the development of microinvasive carcinoma.

4. Actively treat anogenital warts, early-stage neoplasia with advanced clinical presentation, late-stage neoplasia, and squamous cell carcinoma.

5. Advise patients to use condoms and limit casual sex to prevent infection (and reinfection) with HPV infection and other STDs.

In fact, the treatment of anogenital HPV lesions is aimed either at the destruction of papillomatous foci by one method or another, or at the stimulation of an antiviral immune response, a combination of these approaches is possible.

Physical destructive methods

Surgical excision. Currently used infrequently, mainly used in the treatment of malignant neoplasms, when a wide excision is needed. This method may require hospitalization due to the fact that during the excision, quite severe bleeding may occur, and a long postoperative period will require special therapy.

Electrosurgical methods. These include electrocoagulation, electroacoustics, fulgation, electrosurgical excision (electroexcision) using an electric knife. Not so long ago, plasma

began to be used in medicine. Our scientists have developed an original plasma coagulator (plasmaskin) EKH-1, which has no foreign analogues. Temperature measurements in plasma showed that it can reach 2000-2500°C.

Such high temperatures, in turn, provide the ability to work in a non-contact mode, the operation time is significantly reduced, and thereby the necrosis zone is reduced. In addition, with such exposure, in most cases, the pain threshold is not exceeded. This temperature regime provides almost complete combustion of neoplasms.

Laser excision. A fairly effective and safe method is the excision of warts with a laser. In practice, neodymium and CO lasers are used. When using a CO laser, the surrounding tissues are less damaged, and a neodymium laser gives a better hemostatic effect. In addition to the fact that the laser physically removes lesions, studies have shown that laser radiation has a toxic effect on HPV.

Procedures require well-trained personnel. When using lasers, anesthesia is necessary - often local or local anesthesia is sufficient, which allows procedures to be performed on an outpatient basis. Laser excision and surgical methods are approximately equally effective. Laser therapy can be successfully used to treat common, resistant to other therapy warts.

The use of CO laser is the method of choice in the treatment of CVI. Apply laser conization of the cervix. Relapses are observed in 2% of patients. A mild method of laser therapy is vaporization, which does not cause almost any complications. Laser vaporization has been successfully used in the treatment of low-grade CVI. Relapses are observed in 4% of patients. Laser therapy has been successfully used to treat genital warts in pregnant women. There are reports on the treatment of pregnant women at the 28-35th week of pregnancy. Most patients recovered after the first session. There were no complications during childbirth or in newborns.

Side effects include ulceration, bleeding, secondary infection, and scarring. As with electrosurgical methods, HPV DNA is shed in smoke, which also requires precautions.

Laser therapy is not widely used due to the high cost of equipment and the need to train experienced personnel.

Cryotherapy. A fairly effective and safe method involving the use of liquid nitrogen, nitrogen oxide and carbon dioxide as a refrigerant. In this case, there is a rapid freezing of both intra- and extracellular fluid, leading to lysis and cell death during thawing. Cryotherapy usually does not require anesthesia, although local anesthetics can be used if necessary. Cryotherapy can be used in the treatment of not very large warts of various localization.

This method is characterized by the following side effects: the development of local redness, swelling, followed by the formation of blisters and their ulceration. To reduce damage to surrounding tissues, before the procedure, the surface of the warts is treated with KY-gel, which, when frozen, makes it possible to carefully lift and separate the lesion from the underlying epithelium.

The method can be used in gynecological practice.

The combined use of cryodestruction and plasma coagulation seems to us to be extremely promising, which makes it possible to avoid the disadvantages inherent in the above methods separately.

Chemical destructive methods. This group of products includes solutions of acids, alkalis, salts. Among them, ferezol, hydrogen peroxide, solutions of quinacrine and chingamine,

preparations of mercury and arsenic, bismuth, preparations based on salicylic and lactic acids, acetic and nitric acids, thuja and celandine juices can be mentioned.

Isoprinosine should be used in combination with locally destructive treatments.

The effectiveness of combined treatment of PV, according to the literature, ranges from 38 to 96%.

Combined treatments. Various methods based on the use of immune preparations in combination with laser, electrosurgical and cryodestructive effects are proposed for the treatment of manifestations of HPV infection.

The combined use of the above methods can reduce the number of relapses and thereby increase the effectiveness of treatment.

Good results have been obtained using a combined method of treating warts, including the destruction of foci by cryodestruction (exposure temperature from –160 to –180°C, exposure 40–120 s, twice) in combination with immunity stimulation. To stimulate local immunity, the affected area was treated with an emulsion containing interferon (IF), and to stimulate the immune system of the whole body, the drug kemantan was administered at a dose of 0.2 g three times a day orally for 10 days.

A combination of various destructive methods is possible. If there are manifestations of HPV infection on the skin and mucous membranes, cryopreservation is preliminarily performed for 10–30 s, which makes it possible to clearly identify the boundaries of the lesion due to the characteristic papillary surface of the lesions, which turns white. The affected area is then exposed to plasma (using the Plasmaskin apparatus).

A number of researchers recognize the surgical removal of all visible lesions, followed by local administration of interferon, as the best way to treat anogenital warts. In some cases, general and local application of IF is advisable before surgical excision of extensive condylomas.

The therapeutic effect of the use of IF is absent if the disease lasts more than one year, as well as in immunodeficiency.

Currently, there are not many remedies that can be used after the use of destructive methods. In particular, the drug impran has now appeared for topical application in the area of lesions after a destructive effect.

Specific antiviral therapy

Currently, there are no drugs that have a specific effect on HPV. Known drugs that suppress the replication of the herpes simplex virus (acyclovir, ganciclovir) were ineffective in the treatment of anogenital HPV infection.

Theoretically, vaccination is an ideal method for the treatment and prevention of anogenital warts.

There are reports of the effective use of IF inducers. Of interest is the topical application of a low molecular weight derivative of imiquidachinolinamine - imiquimod, which is an inducer of cytokines and, in particular, L-IF. It is used in the form of a 5% cream three times a week or daily at night until the rashes completely disappear (but not more than 4 months). Complete disappearance of warts is observed in 13-56% of cases. With daily use, local side effects more often developed: redness, swelling, erosion. The cream is especially indicated for the treatment of subclinical HPV infection. Perhaps the use of virazole.

The effect of the use of IF monotherapy is still insufficiently studied and not very high, in addition, it is necessary to take into account the high cost of such treatment. As a result, this method is not widely used in practice.

Isoprinosine. In recent years, the attention of immunologists has attracted a new immunomodulator isoprinosine, which is a complex of inosine and salts of N,N-dimethylamine-2-propanol and P-acetaminobenzoic acid. The drug can be used in the form of tablets or solution for parenteral injection. The active substance in this complex seems to be inosine, and the amino alcohol salt stimulates its penetration through the membrane of lymphocytes and other cells.

Various treatment regimens with the use of isoprinolin have been adopted, depending on the size of warts, their localization and the degree of malignancy.

Among the chemical preparations used in our country and abroad that have a destructive effect, one can single out TCA and nitric acid, as well as a combined acid preparation - Solcoderm.

TCA and nitric acid. TCA is used in 80-90% concentration and causes the formation of local coagulative necrosis. A solution of nitric acid has a similar effect. Due to their low cost and availability, both methods are quite widespread to this day. Acids are effective for the treatment of warts of the vulva, preputial sac, coronal sulcus, glans penis, especially in cases where the use of PF and PFG is contraindicated. Cauterization is carried out once a week for 5-6 weeks. The effectiveness of the use of TCA and nitric acid is approximately 70-80%. In some cases, a local reaction may develop in the form of weeping and ulceration.

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