

DOI: 10.21767/2471-9803.1000151

# Mysterious and Insidious Interstitial Cystitis

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## Abstract

Although women are considered to be weak sex, they have a strong body. What are the hardships of bearing, giving birth and feeding a child! However, unfortunately, features of anatomy sometimes determine the adherence of women to certain diseases, in particular inflammatory processes in the bladder, which often become chronic. We will tell you about the common form of chronic interstitial cystitis.

- Sex. As already mentioned, in 90% of cystitis is observed in women. It is important to note that in men the symptoms of this disease are most often associated with concomitant prostatitis.
- Skin and hair color. Light-skinned red-haired women are at higher risk of developing IC.
- Age. In most cases, the diagnosis is first established for patients 30 years and older.
- Chronic pain syndrome, for example, irritable bowel syndrome or fibromyalgia.

Its main symptoms are day and night pollakiuria (sometimes the urge arises every 15 minutes), imperative urges and pain of varying localization and severity (pelvic pain, pain in filling the bladder, burning and stinging during urination, pain with coitus, nocturnal pain, etc.). At the same time, women with IC lose the opportunity to lead a normal life, work, suffer from sleep disturbances [4,5].

The etiology of the disease is still not known, although the first written reference to it appeared more than 150 years ago. Conducted since then, numerous studies have not allowed building a harmonious hypothesis regarding the etiology and pathogenesis of IC. In addition, the results obtained often contradicted each other.

There are many theories devoted to the causes of the development of the disease [6]:

- Autoimmune theory.
- Theory of the increased content of mast cells in the bladder, which secrete biologically active substances that cause clinical and histological changes.
- Violation of the barrier functions of the urothelium, which leads to an increase in its permeability for some potentially toxic substances in the urine (the theory of "epithelial leakage")
- Initial infection of the urinary tract, which eventually breaks the integrity of the epithelium.
- Violation of the protective mucopolysaccharide layer produced by the cells of the urothelium.
- Impaired circulation in the wall of the bladder.
- Neurogenic theory (including neurovascular disorders, the effect of "phantom pain")

**Keywords:** Cystitis; Interstitial cystitis; IC; Pelvic pain

## Epidemiology

Interstitial cystitis (IC) means a clinical syndrome characterized by frequent daytime and nighttime urination and pelvic pain.

The figures indicate that in 90% of cases the pathology falls on the female part [1]. Previously, this disease was considered quite rare: it was assumed that it develops only with a probability of not more than 5.1: 1000 [2]. However, in recent years, less encouraging data have been obtained. Thus, epidemiological studies have shown that in American women IC is identified with a probability of 60-70: 100,000 [1]. At the same time in Europe, the prevalence of the disease does not exceed 18 cases per 100,000 [3]. Such a noticeable difference in the epidemiological indicators of the Old and New Worlds can be explained by differences in diagnostic approaches, and by significant differences in lifestyle, nutrition, etc. Unfortunately, there are no statistics on the prevalence of IC in Russia, and domestic specialists rely on Rule, on the information of Western colleagues.

It should be noted that neither the marital status, nor the number of sexual partners, the level of education does not influence on the probability of development of IC [1]. The average age at onset of the disease is 40 years, but cases of development of pathology in young patients, including children, are not ruled out.

The risk factors predisposing to the emergence of IC include:

- Endocrine theory (a lack of estrogen in women in menopause).

It seems reasonable to consider that all these potential causes in the treatment of patients with IC, because from the point of view of pathophysiology they are all interconnected.

As a rule, IC diagnosis is an exception method. A typical ulcer, described by Guy Hunner, is now very rare, with forms of disease resistant to all therapies.

When diagnosing IC, which as mentioned above is an exception method, we were usually guided by exclusion criteria developed by the National Institute of Health of the USA:

- Capacity of the bladder >350 ml.
- Absence of pronounced imperative urges to urinate when filling the bladder with 150 ml of fluid at a rate of 30-100 ml/min during cytometry.
- Presence of phase, involuntary contractions of the bladder with cytometry in the filling phase.
- Duration of symptoms <9 months.
- Absence of nocturia.
- Frequency of urination <8 times/day.
- Diagnosis of "bacterial cystitis" in the previous 3 months.
- Marked clinical improvement when taking uroceptics, antibiotics, anticholinergic or antispasmodics.
- Age less than 18 years.
- Presence of concomitant diseases of the genitourinary system (stones in the lower third of the ureter and bladder, bladder tumor, urethra and genital organs, urethral diverticula, cyclophosphamide and other types of chemical cystitis, tuberculous cystitis, radiation cystitis, vaginitis, active genital herpes).

In the process of examination of patients with prospective IC the following diagnostic complex is used:

- Collection of anamnesis of the disease and anamnesis of life.
- Physical examination of patients, including examination on the gynecological chair.
- Microscopic examination of urine.
- Bacteriological examination of urine.
- Examination of smears from the urethra, cervical canal and vagina by direct immunofluorescence (DIF) or polymerase chain reaction (PCR).
- Clinical and biochemical blood test.
- A blood test for the presence of antibodies to the herpes simplex virus, cytomegalovirus.
- Ultrasound examination of the kidneys and bladder.
- Excretory urography with descending cystography.
- Complex urodynamic examination (CUDI) with urethral profilometry.
- Cystoscopy with multifocal biopsies of the bladder wall.

Principles of treatment of IC:

Therapy IC has two main tasks: relief of pain and reduction in the severity of the inflammatory process. Unfortunately, it is not easy to achieve these goals. In most cases, the treatment of

interstitial cystitis in women and men presents a serious problem in restoring the patients' normal quality of life. There is no clearly defined, standardized treatment that would alleviate the suffering of most patients. As a rule, the technique is selected on the basis of the patient's individual response. In this case, given the likelihood of spontaneous remission, expensive or aggressive treatment is prescribed with caution [1].

An integral part of the therapy is the formation in patients of the idea of, alas, the chronic course of the disease, its prognosis and difficulties with treatment. An important role in the successful control of IC is diet therapy.

### Dietotherapy

Some studies have shown that in almost 90% of patients, exacerbation of the disease is associated with the intake of certain products. The lists of "dangerous" products include [1]:

- Coffee
- Alcohol
- Glutamate sodium
- Tomatoes
- Vinegar
- Citrus fruits
- Spicy food
- Chocolate

Many experts recommend or avoid altogether consumption of triggers, or make them in the diet occasionally. To reflect the connection between the introduction of various foods into food and the exacerbation of symptoms of IC it is advisable to keep a diary of nutrition. Next, consider how to treat interstitial cystitis.

### Pharmacotherapy

The most common error in drug therapy IC is associated with the incorrect appointment of antibiotics, absolutely ineffective in such cases. The roots of these misconceptions lay in the initially incorrect diagnosis, which, as a rule, is established empirically, on the basis of exclusively clinical symptoms, bacterial inflammation of the bladder. It can be said that the pledge of effective treatment of interstitial cystitis in the correct determination of the causes of the onset of symptoms.

Medication of interstitial cystitis involves the appointment of oral medications and intravesical instillations of medicinal substances.

Among the preparations for internal use, it should be noted:

Tricyclic antidepressants (amitriptyline). Low-dose drugs of this group help to relax the bladder, and also prevent the release of substances that can provoke pain and inflammation. In addition, tricyclic antidepressants improve the quality of sleep. According to a randomized, double-blind, placebo-controlled study, amitriptyline allows a statistically significant improvement in condition with IC [7].

Antihistamines, in particular, hydroxyzine, which in the Russian Federation belongs to the pharmacological group of anxiolytics (tranquilizers).

Antiallergic drugs block the release of histamine from mast cells located in the walls of the bladder, which helps reduce pain, the severity of inflammation, as well as reducing the number of urges to urinate, including the night. It should be borne in mind that hydroxyzine can have a sedative effect, so it is preferable to prescribe it before bedtime.

NSAIDs, Naproxen, ibuprofen, paracetamol, meloxicam, celecoxib and other NSAIDs are used as anti-inflammatory and analgesic agents that can cure mild to moderate pain syndrome with IC.

For the intravesical instillations, the local anti-inflammatory agent dimethylsulfoxide is widely used, it is the only drug approved for use by the American Food and Drug Administration FDA. Against the background of the introduction of dimethyl sulfoxide, the walls of the bladder relax, the pain and the severity of the inflammation decrease. The standard course of treatment includes six instillations (one per week for six weeks).

### Other treatments

In addition, physiotherapeutic procedures (endovascular iontophoresis, laser photo bladder, UHF, inductotherapy, balneotherapy, etc.), as well as surgical treatment, which is performed only in severe persistent cases, can be used with IC. During a surgical procedure, they try to achieve an increase in the bladder, optimize the outflow of urine and perform a resection of ulcerative lesions of the mucosa (if there are any).

At present, we can say with certainty only that only an integrated approach to IC therapy allows us to achieve positive results.

### Prognosis of interstitial cystitis

Despite the fact that most often the disease has intermittent flow, which is characterized by alternation of exacerbations and remissions, severe cases are not ruled out, in which there is a gradual and persistent progression of symptoms of IC that cannot be stopped. Sometimes it is possible to alleviate the clinical picture of the disease with the help of self-control measures, such as giving up smoking, increasing physical activity, reducing the influence of stress factors, choosing free lingerie and clothes, and of course, dieting.

And yet, urologists admit that there is no means to prevent or significantly reduce the severity of IC symptoms.

The disease seriously reduces the quality of life, and so much so that in the US, for example, this diagnosis gives grounds for obtaining a disability. The work presented by American scientists

under the direction of Kimberly Hepner in 2012 showed that in a group of adult women with IC symptoms 11% of respondents considered suicide as a way of getting rid of the torment associated with their illness [8]. Research data suggests that the impact of IC on quality of life can be compared with the suffering experienced by patients at the terminal stage of renal failure or rheumatoid arthritis [9,10].

All these inconclusive information say that modern scientists have a difficult task of searching for new agents and methods for the treatment of chronic cystitis, a serious disease that remains one of the most complex and as yet unsolved mysteries in world medicine.

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