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Application of Non-Steroid Anti-Inflammatory Drugs in Chronic Bacterial Prostatitis

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Abstract: Purpose of the study of great importance is the rational choice when using non-steroidal anti-inflammatory drugs in the treatment of chronic bacterial prostatitis, determining the effectiveness and ensuring its safety.

Keywords:

Actuality: Chronic prostatitis (CP) is one of the most common urological diseases. According to N.A. Lopatkin (1998), in Russia, CP accounts for up to 35% of all visits to the doctor for urological problems among men aged 20 to 50 years. The prevalence of prostatitis according to various sources ranges from 35-40 to 70-90% of cases. The incidence of prostatitis increases with age: there is a point of view that after 30 years, 30% of men suffer from prostatitis, after 40 years - 40%, after 50 years - 50%, etc. [1-7]. Continuous recurrence of the disease in the future has great social significance and it remains one of the important problems of our time [1,4]

Purpose of the study: Of great importance is the rational choice when using non-steroidal anti-inflammatory drugs in the treatment of chronic bacterial prostatitis, determining the effectiveness and ensuring its safety.

Materials and research methods: 40 studied medical records of patients with ages from 25 to 43 years were treated at the VITAMED clinic using the classification proposed by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) and the US National Institutes of Health (NIH), according to which bacterial prostatitis with a confirmed or suspected pathogen should be distinguished from chronic pelvic pain syndrome (CPPS)⌊261-263⌋ with a diagnosis of chronic bacterial prostatitis 2B. In most cases, concomitant disorders were recorded: infertility - 15%, erectile dysfunction - 30%, premature ejaculation - 5% and 50% of patients had spermatogenesis disorders of varying severity.
Taking into account that patients enter the clinic after 1-2 months of illness after outpatient treatment at residence and the participation of bacteria and microorganisms in the development of chronic bacterial prostatitis (CBP) in patients, etiotropic therapy with fluoroquinolones antibiotics was mainly carried out. Non-steroidal anti-inflammatory drugs are used for pathogenetic and symptomatic therapy of CBP.
In pathological conditions, the appointment of non-steroidal anti-inflammatory drugs (NSAID) of the second generation - oxycams (meloxicam) has an anti-inflammatory, analgesic, antiplatelet effect.
Pharmacokinetics of the route of administration of NSAID 2nd generation enterally, parenterally, intramuscularly, suppository form. NSAID preparations are highly bioabsorbable. For example, Meloxicam has high bioavailability, especially in the acidic environment of the stomach, absorption is 89%. The time of occurrence of the maximum concentration of NSAID in the blood after oral administration is 0.5-2 hours. Plasma protein binding is 80-99%. At the same time, NSAIDs, having a very high affinity for proteins, are classic displacers of other drugs and metabolic products from protein binding.
The drugs penetrate well into various tissues and body fluids, and this occurs especially intensively during acidosis observed under conditions of hyperthermia, dehydration, etc. Derivatives of indoleacetic acid and oxicam penetrate into the synovial fluid better than others.
The time for maintaining therapeutic concentrations in the blood for most NSAIDs is 6-8 hours, so the frequency of their administration is 3-4 times a day. However, there are long-acting drugs (oxicam, sulindac), which must be taken once a day.
All NSAIDs undergo 90-97% biotransformation in the liver. With its pathology, they accumulate in the body unchanged, which contributes to the occurrence of undesirable effects. However, there is another danger too

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quickly (for example, when simultaneous administration of NSAIDs with phenobarbital, diphenine, etc.) and in large quantities of their toxic metabolites (mercaptopuric acid, etc.).

Most NSAIDs are excreted 90% by the kidneys, mainly due to tubular secretion, so long-term use of these drugs (except sulindac) may result in damage to the epithelium and the occurrence of tubulointerstitial nephritis. When urine is alkalinized, the reabsorption of metabolites decreases, and the rate of their elimination increases significantly (4 times or more). A very small percentage of drugs are excreted in bile. However, some of them (oxicams, sulindac, indomethacin) undergo enterohepatic circulation, which contributes to their retention in the body.

Interactions of NSAIDs with drugs from other groups. First-generation NSAIDs cannot be combined with loop diuretics (furosemide, ethacrynic acid, etc.), since the effects of the latter are reduced.

Anti-inflammatory drugs displace many drugs from binding to plasma proteins, thereby increasing their free fraction, which is accompanied by complications. For example, displacement of indirect angicoagulants leads to hemorrhages; synthetic antidiabetic agents - to hypoglycemia; digitoxin - to arrhythmias and other manifestations of its toxicity, etc.

NSAIDs reduce the renal clearance of digoxin and aminolycosides, leading to their accumulation and poisoning with these drugs.

The simultaneous administration of antacids reduces the absorption of NSAIDs from the intestine and increases their excretion by the kidneys. Therefore, the dose of NSAID must be increased.

When an NSAID is combined with glucocorticoids, the anti-inflammatory effect is enhanced, and with narcotic analgesics, the analgesic effect is enhanced.

Adverse effects of NSAID II: anemia, nausea, vomiting, abdominal pain, diarrhea or constipation

Rarely occurs: leukopenia, thrombocytopenia, bronchospasm, increased activity of liver transaminases, belching, esophagitis, stomatitis, gastric and duodenal ulcers, hyperbilirubinemia, gastrointestinal bleeding, tinnitus, drowsiness, vertigo, urticaria, angioedema, immediate hypersensitivity reactions, including anaphylactic and anaphylactoid, bronchospasm..

Very rare: colitis, gastritis, gastrointestinal perforation, hepatitis, peripheral edema, increased blood pressure (BP), palpitations, flushing, headache, dizziness, disorientation, confusion, emotional lability.

Research results: The patients were prescribed combination therapy. Fluoroquinolones are considered the drugs of choice for the treatment of CBP, despite the high resistance of uropathogens, because they have favorable pharmacokinetic properties [299], a good safety profile and activity against Gram-negative pathogens, including P. aeruginosa and C. trachomatis [264, 300]. However, the increase in resistance should be taken into account. Azithromycin and doxycycline act against atypical pathogens such as C. trachomatis and Mycoplasma genitalium [267, 276]. Levofloxacin does not provide cure for C. trachomatis in patients with CBP [301]. Metronidazole is indicated for T. vaginalis infection [268]. The duration of fluoroquinolone therapy should be at least 14 days, and azithromycin and doxycycline should be extended to at least 3–4 weeks [267, 276]. For CBP, antibiotics should be prescribed for 4–6 weeks after the initial diagnosis [271]. If intracellular microorganisms are isolated or suspected, macrolides or tetracyclines should be prescribed [264, 299, 302].

All patients underwent instrumental studies and clinical and laboratory tests.

• PSA (total, free);
• microbiological examination—four-glass localization test;
• transrectal ultrasound examination of the prostate;

After treatment, combination therapy including: antibacterial drugs, anticholinergics, immunomodulators, angioprotectors and the use of second-generation NSAIDs, the patients' condition improved for the better. After 2 months, the patient was tested again: PSA (total, free); microbiological examination - four-glass localization test; spermogram. The result was very good; the PSA analysis and spermogram had already returned to normal. In a microbiological study—a four-glass localization test—bacterium and leukocytes were not detected.

To treat inflammation in the prostate area, patients were prescribed a second-generation NSAID in the form of a suppository 15 mg rectally at night for 15 days, taking into account that suppositories are less likely to

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cause side effects, have less effect on the condition of the gastrointestinal mucosa, and that the active substances contained in the suppositories are delivered directly to the site of inflammation.

The anti-inflammatory effect of NSAID II and anti-sclerosis in the area of inflammation is explained as follows: it is believed that it is COX-2 that is more frequent. production of pro-inflammatory PGs, potentiating the activity of inflammatory mediators (histamine, serotonin, bradykinin), irritating pain receptors at the site of inflammation, participating in the regulation of the activity of the thermal regulation center, promoting cell proliferation, mutagenesis and destruction.

Suppression of COX leads to increased utilization of arachidonic acid through the lipoxygenase pathway and to increased formation of leukotrienes, some of which cause vasoconstriction and limit exudation. A very important role in the anti-inflammatory effect of drugs in this group is played by their ability to inhibit which, by damaging cell membranes in inflammation, contribute to its spread and progression. In addition, inflammation is very sensitive to a lack of energy, and NSAIDs inhibit the production of high-energy phosphates (primarily ATP) in the processes of oxidative and glycolytic phosphorylation. Finally, NSAIDs have a cytostatic effect, leading to inhibition of the proliferative phase of inflammation and a reduction in the anti-inflammatory sclerotic process, since collagen, the main protein of sclerotic tissues, is of cellular (fibroblastic) origin.

Conclusions: Thus, taking into account the literature data and analysis of pharmacotherapy based on medical histories for CBP, it can be recommended to prescribe a second generation NSAID. The simultaneous administration of Meloxicam with other NSAIDs (including salicylates) in high doses is unacceptable, due to the synergistic interaction, their side effects of erosive and ulcerative lesions of the gastrointestinal tract increase. To avoid side effects, you cannot prescribe 2 drugs in the same group at the same time. Drugs of choice from NSAIDs, it is better to prescribe NSAIDs of the second generation. Because the use of selective COX-2 inhibitors is significantly less dangerous than other NSAIDs.

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