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Research Article

On the Efficacy and Safety of Comprehensive Antibiotic Therapy in Elderly Patients with Relapsing Chronic Bacterial Prostatitis Associated by Prostatic Hyperplasia

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Abstract

The study included 102 patients of the older age group (mean age 70.5±1.7 years) with a clinical and laboratory diagnosis of recurrent chronic bacterial prostatitis complicated by prostatic hyperplasia. Two equal groups of 51 people were formed: main and comparison. Patients of the main group received fluoroquinolone levofloxacin 500 mg once a day for 4 weeks, bifiform probiotic 2 caps. 2 times a day for 4 weeks, enzyme Chymotripsin, immunomodulator polyoxidonium (rectal suppositories No. 10), antioxidant complex "Selzinc plus" 1 tab. per day for 4 weeks, drugs that improve hemodynamics and microcirculation in the prostate, inhibitors of 5-α reductase. Patients in the comparison group received standard therapy. Three visits were scheduled: baseline screening and 1 and 3 months after completion of treatment. Efficacy and safety of complex antibacterial and standard therapy was assessed by analyzing the average clinical and laboratory data of the International Questionnaires IPSS, NIH - CPSI, IIEF-5, Qol, the features of the clinical course of the disease depending on the treatment regimens used.

The results of this study demonstrate the efficacy and safety of comprehensive antibiotic therapy compared to standard antibiotic therapy. Patients in the main group had a mean score almost twice as high as those in the comparison group. The results of this study allow the use of complex antibacterial therapy with the inclusion of an immunomodulator, polyenzyme and antioxidant complex in the treatment of older patients with recurrent chronic bacterial prostatitis complicated by prostatic hyperplasia.

Keywords: Patients; Older Age Group; Prostatitis; Antibiotic; Polyenzyme; Immunomodulator; Antioxidant

Introduction

Recurrent chronic bacterial prostatitis (CRP) is the most prevalent urological disease and is a pressing social as well as medical problem [1-3]. In chronic bacterial prostatitis there are disturbances in the immune status of patients, local immunity decreases, which in turn contributes to impaired microcirculation and haemodynamics of prostatic tissue and sexual dysfunction is noted [4-6]. Given the fact that CPS is a polyetiological disease, in the occurrence of which various factors are involved, the therapy of prostatitis must be comprehensive, etiopathogenetically determined. Conditionally pathogenic microbiota and

uropathogens form structures in the inflammation focus that are in a polysaccharide complex (so called "biofilms") [7-10] that prevent penetration of antibacterial drugs into prostate tissue, which prompts the use of drugs with polymodal action (polyenzyme vobenzyme causes hydrolysis of biofilm structure).

Taking into account the fact that RXBP in elderly patients is accompanied by immunodeficiency, oxidative stress, we used immunomodulator polyoxidonium (azoximer-bromide-rectal suppositories), polyenzyme wobenzyme and antioxidant - selcink plus in the complex antibacterial therapy.

Purpose of the Study

To study the efficacy and safety of the treatment of elderly patients with RXBP complicated by prostatic hyperplasia using combined antibiotic and standard therapy.

Materials and Methods

The study included 102 older patients (mean age 70.5±1.7 years) with recurrent chronic bacterial prostatitis. The duration of the disease at the time of treatment ranged from 3 to 18-20 years. Relapses of the disease occurred on average 2-3 times during the year. Patients had previously received antibiotic therapy, drugs to improve microcirculation and haemodynamics in the prostate tissues (actovegin, escuzan, trental - optionally), α-adrenoblockers and 5α-reductase inhibitors, but the effect was short-lived.

- **Criteria for inclusion of patients in the study:** Recurrent chronic bacterial prostatitis: age 60 and over, NIH classification of prostatitis with an NIH-CPSI score >9; written consent of the patient to participate in the study.
- **Criteria for not including patients in the study:** The presence of sexually transmitted infections (STIs), prostate cancer, cardiovascular and renal-hepatic diseases in decompensation. Comprehensive urological examination included collection of complaints and medical history, physical examination, laboratory and urodynamic instrumental methods. Microcirculation in prostate tissues was assessed by LDF method on laser blood microcirculation analyzer LAKK-0,2 (SPE LASMA, Russia).

The patients were divided into two groups of 51 (study and comparison). Patients in the main group received the fluoroquinolone levofloxacin 500 mg 4 times a day for 4 weeks, probiotic bifiform - 2 capsules 2 times a day for 4 weeks, polyenzyme wobenzyme 3 tablets 3 times a day for 4 weeks, antioxidant complex Selzink plus 1 tablet a day for 4 weeks. For four weeks the following products were prescribed: polyferment wobenzyme 3-tablet 3 times a day, antioxidant complex "Selzink plus" 1 tablet a day - 4 weeks, drugs that improve microcirculation and hemodynamics in the prostate, α-adrenoblockers and inhibitors of 5α- reductase. Patients in the comparison group received levofloxacin, bifiform, actovegin, α-adrenoblockers and 5α-reductase inhibitors. During the course of the comprehensive antibiotic therapy, 3 visits were provided: screening (baseline), 4 weeks and 3 months after completion of treatment. After completion of therapy, the International Prostatitis Symptom Scale Index (IPSS), NIH-CPSI, Qol and MIEF-5 scales of chronic prostatitis symptoms were taken into account. Finger rectal examination (PRI), transrectal ultrasound (TRUS), uroflowmetry and microcirculation in the prostate (PS) by LDF were performed at each visit. The criteria for the effectiveness of the therapy were positive dynamics of the mean reduction of lower urinary tract symptoms (LUTS), reduction of the prostate volume (V), improvement of urodynamics and microcirculation (TRUS, uroflowmetry and LDF data).

Statistical processing of the results of the study was carried out by calculating the arithmetic mean and their standard errors. The significance of mean values was assessed using the nonparametric Wilcoxon-Mann-Whitney U test at $p < 0.05$ and Student's t-test.

Results and Discussion

During the treatment, the patients observed by us showed an improvement in subjective and objective indicators of the disease, no adverse reactions were noted.

Analysis of the microbiological study of the 3rd portion of urine and prostate secretion showed an increase in uropathogens of opportunistic microbiota in a titer of 10^5 - 10^6 CFU / ml. The spectrum of the isolated microbiota is presented in Table 1.

From the data presented in Table 1, among the priority uropathogens of infectious and inflammatory pathology of the prostate gland, the dominant role belongs to Escherichia coli (59.3%

Representatives of opportunistic microbiota	Spectrum of the microbiota of the 3rd portion of morning urine (in %)	Microbiota spectrum of prostate secretion (in%)
Escherichia coli	59,3%	57,5%
Pseudomonas aeruginosa	12,4%	11,3%
Serratia marcescenes	7,4%	8,2%
Klebsiella spp.	8,6%	7,5%
Proteus mirabilis	5,7%	4,7%
Enterococcus faecalis	4,3%	4,0%
Staphylococcus spp.	2,7%	2,2%

Table 1: Species composition of the microbiota and the 3rd portion of morning urine and prostate secretion.

and 57.5%). The species affiliation of the isolated microbiota strains by biochemical properties was determined using microtest systems for the accelerated identification of enterobacteria (MTSM12E), staphylococci (MTS- S).

As a result of complex antibiotic therapy, pain syndrome persisted in 26% of patients in the main group, and in 69% in the comparison group ($p < 0.05$).

When assessing the quality of life using the SF -36 questionnaire before treatment, most patients showed a decrease in indicators characterizing the physical and psychological components of health. After the completion of complex antibiotic therapy, a significant ($p < 0.05$) improvement in indicators characterizing the physical and psychological components of health was noted: an increase in the level of physical functioning (PH), a decrease in the intensity of pain syndrome (BP), due to changes in which an increase in the level of role functioning was noted (RE) due to physical condition (PF) and, accordingly, an increase in the level of general health. Quality of life indicators are presented in Table 2.

Quality of life indicators	Abbreviation	Quality of life indicators	
		Before treatment	After completion of treatment
Physical functioning	PF	90%	96%
Role physical functioning	RF	52%	74%
Pain syndrome	BP	53%	42%
General health	CH	42%	54%
Viability (vitality)	Vt	41%	53%
Social functioning	SF	45%	54%
Role emotional functioning	RF	40%	45%
Mental health	MH	44%	50%

Table 2: Average indicators of quality of life according to the International Questionnaire SF-36.

The effectiveness of the complex antibiotic therapy is also indicated by a decrease in the number of leukocytes in the clinical sample (prostate secretion) (Figure 1).

As can be seen from the data presented in Figure 1, the number of leukocytes in the secretion of the prostate as a result of the therapy in patients of the main group decreased by almost 1.5 times compared to the comparison group ($p < 0.05$).

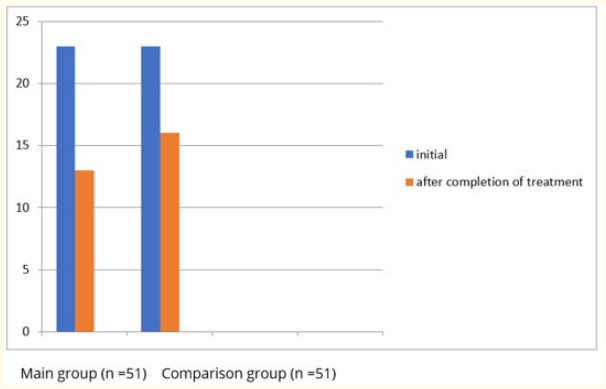

Figure 1: Dynamics of the number of leukocytes in the secretion of the prostate in groups of patients with chronic bacterial prostatitis, depending on the methods of therapy used.

Complex antibiotic therapy contributed to the reduction of residual urine (Figure 2).

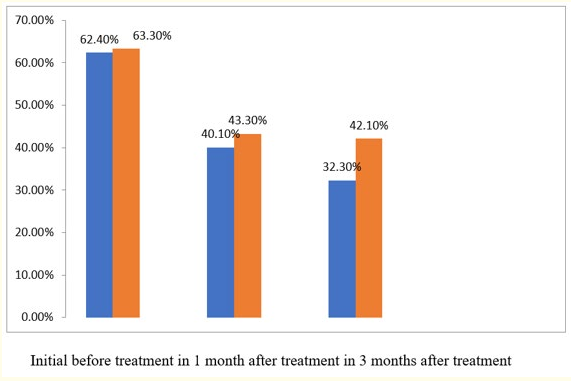

Figure 2: The average indicators of residual urine (in ml) after the completion of therapy (in units).

After the completion of complex antibiotic therapy, the residual urine index decreased by 29.9 units. compared with the standard ($p < 0.05$).

Discussion

The changes revealed in the pancreatic secretion in the examined patients apparently occur due to the organotropic effect of the drug on the pancreas, which helps to reduce the degree of edema and normalize the secretory function of epithelial cells. A statistically significant decrease in the volume of the prostate, a decrease in the volume of residual urine, as well as the elimination of quantitative changes (in 89.8% of patients) can be explained by a decrease or disappearance of the paraprostatic edema of the organ and the effect on the vascular phase of capillary permeability.

According to the results of our study, changes in basal blood flow indicate the presence of vasoconstriction, a decrease in blood flow and ischemia of the prostate tissue. A statistically significant increase in tissue perfusion, microcirculation efficiency index and a decrease in the bypass index indicate the elimination of existing microcirculatory disorders of the pancreas.

These changes, apparently, occur due to a decrease in the process of thrombosis, an increase in antiplatelet activity and an obstacle to the development of vein thrombosis in the pancreas.

Conclusion

The results of the study indicate the efficacy and safety of complex antibiotic therapy with the inclusion of fluoroquinolone levofloxacin, the immunomodulator polyoxidonium, polyenzyme Wobenzym and the antioxidant complex “Selzinc plus” in older patients with recurrent chronic bacterial prostatitis complicated by prostate hyperplasia. The used scheme of complex antibiotic therapy has a positive effect on the main symptoms of CKD, significantly reduces pain, urination disorders, helps to reduce the volume of the pancreas and the volume of residual urine, and restores microcirculation in the prostate gland. It should be emphasized that the improvement in the quality of life of the examined by us, complex in structure, patients with polypharmacy, secondary immunodeficiency, sexual dysfunction.

Thus, the complex antibacterial therapy used by us in the study contributed to the improvement of the medical and social rehabilitation of patients with recurrent chronic bacterial prostatitis complicated by prostatic hyperplasia.

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