

## ACUTE AND CHRONIC PROSTATITIS

Smjesko Gordana

University of Novi Sad, Medical Faculty, Department of Microbiology, Novi Sad, Serbia  
Institute of Public Health of Vojvodina, Novi Sad, Serbia

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**Abstract:** Today is very well known that prostatitis is often disease in men in the age of 50 and also it make a 1/3 of urological diseases in men over 50 year old, following benign glandular prostatic hyperplasia as well cancer of prostata.

**Acute bacterial prostatitis:** Disturbed disorders are: general weakness, fever, pain or feeling of discomfort between the spine and the scrotum or the end of the colon, and frequent, painful and difficult urination is observed. Acute bacterial prostatitis most commonly occurs in men between the ages of 20 and 40. Disturbed disorders are: general weakness, fever, pain, or feeling of discomfort between the anus and the scrotum or in the end of the colon. In addition to the above symptoms, frequent, painful and difficult wetting occurs, and sometimes the urinary incontinence can occur. In case of suspected acute prostatitis, a prostate examination in the finishing section of the colon should be performed. The prostate is extremely painful on the touch, warm and sometimes “wet” consistency. In some cases, manure accumulation can occur within the prostate tissue, which leads to abscess (crowding), which should be surgically opened and emptied of purulent contents.

**Chronic bacterial prostatitis:** Due to the presence of bacteria in the tissue of the prostate, chronic bacterial prostatitis is associated with frequent recurrent acute cystitis, or inflammation of the bladder mucous membrane. In this disease, patients are mostly free from the acute phase of worsening condition.

**Key words:** prostatitis, acute, chronic.

### INTRODUCTION

Pathologically, prostatitis is defined as an increase in the number of inflammatory cells within the prostate. The inflammatory process may be infectious or inflammatory. The most common histological phenomenon is lymphocytic infiltration in stroma, which bor-

ders with prostate acinus. Prostatitis is a broad diagnosis that includes four clinical entities, including acute bouts of immediate attention (acute bacterial prostatitis), two chronic conditions (chronic bacterial prostatitis, chronic pelvic pain), and a random discovery of inflammation (asymptomatic prostatitis) recorded in evaluation and treatment other urological conditions. In addition, prostatitis exacerbates the state of the kidneys and urinary tract and causes inflammatory processes in them (1, 2, 3).

Urinary tract infections are a significant source of morbidity and mortality, in defiance of the wide use of antibiotics. Prostatitis is the prevailing and exhausting disease, the most common urological diagnosis in men under the age of 50, and the third most common diagnosis in men over the age of 50 years (after benign prostatic hyperplasia and prostate cancer). Researchers estimate that between 10 and 12 percent of men will suffer from symptoms similar to prostatitis. Despite the prevalence and exhaustion of health resources, our understanding of etiology, diagnostics and the treatment of prostatitis has not yet advanced to the widely accepted level. These statistics clearly emphasize the wide and far-reaching effect of prostatitis on the quality of life of the patient and the economic impact of the disease.

### DISTRIBUTION OF PROSTATITIS

Prostatitis represents an increase in the number of inflammatory cells inside the prostate gland. Prostatitis is very broad process which involve four clinical issues, as are acute bacterial prostatitis, chronic bacterial prostatitis, chronic pelvic pain and asymptomatic prostatitis (1, 2, 3).

The very important precipitating factor which contribute source of morbidity and mortality are urinary tract infections. Infections of urinary tract are important in morbidity and mortality in genesis of prostatitis in men under the age of 50. Researchers estimate

that between 10 and 12 percent of men suffer from symptoms similar to prostatitis.

### Distribution of prostatitis

During years prostatitis has been divided in 4 clinical entities:

1. Acute bacterial prostatitis (ABP)
2. Chronic bacterial prostatitis (CBP)
3. Neo or abacterial prostatitis
4. Prostatodinia.

Today, there is currently classification of prostatitis created by National Institute of Health (NIH):

Category 1 – acute bacterial prostatitis (acute prostatic infection). ABP is determined as infectious disease of the lower urinary tract, caused by bacteria, mostly often by *Escherichia coli*;

Category 2 – chronic bacterial prostatitis (recurrent infection of the urinary tract and/or chronic prostatic infection). CBP is considered as a bacterial prostatic infection following by complex of symptoms, usually including the same pathogen;

Category 3 – Chronic non – bacterial prostatitis / chronic pelvic pain syndrome. This is the most common type of prostatitis (90% of all cases). The diagnosis is based on examination of the prostatic secretion, clinical findings and results of the culture. Based on the difference in the findings, it can be classified in two subcategories:

Category 3A – Chronic pelvic pain inflammatory syndrome (the presence of white blood cells in seminal fluid and/or cured prostatic secretion);

Category 3B Non-inflammatory chronic pelvic pain syndrome (no white cells in seminal fluid and/or cured prostatic secretion);

Category 4 – Asymptomatic inflammatory prostatitis with confirmation of biopsy, sperm sample and/or cured prostatic secretion, without symptoms). It is often diagnosed covering results of biopsy. The biopsy is usually done because of the classification system of the National Institute of Health (NIH) (4, 5, 6, 7).

### SYMPTOMS

Symptoms of prostatitis depend on the type of disease the patient has. He may not experience any symptoms or such sudden and severe symptoms as he is forced to seek immediate medical attention. Symptoms, when present, may be any of the following: fever, trembling, urinary frequency, frequent urination at night, difficulty urinating, burning or painful urination, perineal (thinking perineum, area between the scrotum and anus) and lower back pain, joints or muscle pain, swollen or sensitive prostate, urine or painful ejaculation.

Symptoms of prostatitis resemble the symptoms of other infections, as well as other prostatic diseases. Therefore, even if the symptoms disappear, prostatic check should be performed. For example, benign prostatic hyperplasia (BHP), non-cancerous prostatic enlargement that is common in men over 40 years, can produce symptoms in the urinary tract of the same as in prostatitis. Similarly, urethritis, inflammation of the urethra (often caused by infection), can also lead to many symptoms associated with prostatitis. Another condition that simulates the symptoms of prostatitis (when prostatitis is not present) is prostatic pain (painful prostate). Patients with prostatic pain have pelvic or perineum pain. Such pain can be the result of prostatic problems, but pain can have a variety of causes, including muscle cramps or other musculoskeletal conditions.

The term that can also be mentioned in the consideration of prostatic problems is prostatic, an even vague word that simply means “state of the prostate”. It can be used instead of the term prostatic (8, 9, 10).

Because of the close association of urethra, bladder and prostate, and conditions that affect these organs often have similar or overlapping symptoms.

### RISK FACTORS

Risk factors may be diverse, those that allow bacterial colonization and/or prostatic infection by potentially pathogenic bacteria include:

- intraprostatic ductal reflux
- phimosis
- specific blood groups
- unprotected anal relationship
- multiple partners
- Urinary tract infections
- acute epididymitis
- intraurethral catheters
- transurethral surgery
- abnormal anatomy of the urinary tract (inborn defect)
- obstruction of the bladder emptying as a result of benign prostatic hyperplasia
- immunosuppressed conditions
- poor fluid intake (reduced frequency of urination)
- pelvic trauma (riding a horse, riding a bicycle)
- the risk is higher for younger than for older men (11, 12, 13, 14).

### ACUTE BACTERIAL PROSTATITIS

#### Etiology and pathogenesis

Acute bacterial prostatitis (ABP) is a generalized prostatic infection and is associated both with lower-end infections of the urinary tract and sepsis. The

main cause of bacterial prostatitis is the family Enterobacteriales-gram negative bacteria, which origin from the gastrointestinal flora. Aerobic gram-negative microorganisms are mainly caused by ABP. The frequency of infections by different species and their antibiotic sensitivity show that these are microorganisms that usually infect urine. *Escherichia coli* is involved in around 75% of infections, *Pseudomonas aeruginosa*, *Serratia*, *Klebsiella* and *Proteus* species take 10-15% of total number of isolated organisms and enterococci 10-15%. Sexually active men under 35 years of age and older men entering into high-risk sexual behavior should be tested on *Neisseria gonorrhoeae* and *Chlamidia trachomatis*. Bacteria stay deep in the prostate and arrange aggregates (known as biofilms); this is a protective mechanism that allows bacteria to persist in prostate. Gram-positive bacteria are ethiological agents of infections only under special circumstances. Anaerobic infections are usually associated with other species. Most infections occur in the peripheral zone where the channels flow out horizontally into the urethra, facilitating urine reflux as well as the intradual pathway. The glands in the central prostate area are empty in the urethra, preventing easy reflux and stagnation. Invasions by rectal bacteria, either directly or via lymphoid pathway, are also believed to cause prostatitis (15, 16, 17, 18).

### Clinical features

ABP is marked by fever and anger, rectal, perineal and lower back pain, rapid and frequent urination and/or dysuria. It can lead to acute urinary retention. Arthralgia and muscular pain are also often. Digital rectal examination confirm extremely sensitive and enlarged gland that is extremely solid and hot. Urine can be with unpleasant odor due to the simultaneous infection of the urinary tract. Huge haematuria can appear occasionally. Physical examination is an important method of evaluating a patient with prostatitis, but it is usually not useful in making a definitive diagnosis or an additional classification of prostatitis. It helps to exclude other perineal, anal, neurological and pelvic diseases, as well as other prostate diseases (19, 20).

The ABP patient may have systemic problems: feverish, febrile, nausea, vomiting, tachycardia, tachypnoea, and even hypotension. The patient usually has suprapubic disorder due to urinary retention. Prostate is usually described as hot, rusty as extremely sensitive. Patients with ABP are considered that do not need prostate massage which is unnecessary and even harmful.

### Diagnosis

ABP is often diagnosed by symptoms and physical examination. A full blood picture usually shows le-

ukocytes while moving towards immature forms. Transurethral catheterization is not recommended. Urinology and other urine tests should be performed. The presence of more than 10 white blood cells per field, observed with a microscope under the magnification of high power, suggests a positive diagnosis. Other laboratory tests (eg electrolyte level, blood culture) are performed depending on the severity of the presentation. Residual urine should be examined if the patient has a tangible bladder or frequent problems of incomplete emptying. Acute urinary retention requiring drainage of the bladder should be addressed using a suprapubic catheter. Backlog urine usually shows pyuria and microscopic hematuria due to infection of the urinary tract.

### Access to the disease

Empirical treatment can be implemented primary against Gram-negative bacteria and enterococci. The choice of antibiotics is conducted on the basis of in vitro assays for antimicrobial susceptibility testing (antibiogram). Flouroquinolones act very well as initial therapy, as well as trimethoprim / sulfamethoxazole. The recommended duration of antibiotic therapy is between 4 and 6 weeks to prevent complications, as are prostate abscess and chronic prostatitis. The auxiliary therapy include antipyretics, analgesics, laxant agents, rehydration and rest. Patients with severe complications, such are: sepsis, immune deficiency and acute urinary retention, require hospitalization. Transurethral catheterization or other instrumentation is contraindicated during the acute infection. Acute urinary retention should be eliminated by suprapubic drainage until the patient is able to empty the bladder independently.

### Complications

In some patients may acute bacterial prostatitis can proceed to chronic bacterial prostatitis, especially if attention is not focused on bacterial eradication. Prostate abscess can develop during acute prostatitis. Immunocompromised patients, diabetics, those with urethral catheter or those on chronic dialysis are at greater risk of developing these complications.

## CHRONIC BACTERIAL PROSTATITIS

### Etiology and pathogenesis

Chronic bacterial prostatitis (CBP) is associated with recurrent infections of the lower parts of the urinary tract, which are a secondary consequence of uropathogenic bacteria inhabited in prostate. Gram-negative bacteria and enterococci are usually presented microorganisms in CBP. Micoplasmas, ureaplasma, and chlamydia are significant pathogens in CBP, and most

of them are believed to be involved in chronic pelvic pain syndrome. Urine reflux and bacteria into the prostate are considered as a very important etiological mechanisms involved in the pathogenesis of chronic bacterial and non-bacterial inflammation of the prostate. The researchers measured a high level of urine and creatinine in EPS (exhaled prostate secretion), which is thought to be a consequence of urinary reflux in the prostate canals. In addition, carbon particles were found in macrophages in EPS, prostate acini and ductal system after surgery in patients with non-bacterial prostatitis.

Bacterial microcolonies can be adhered to ductal and acinar walls and can become resistant to antibiotics. A large number of people with CBP have more prostate calcification confirmed by transrectal ultrasound. Prostatic stones can serve as a source of bacterial persistence and recurrent urinary tract infections. It is believed that the source of pain is located on the pelvic area of the sacral (biting) bone, the rough sedular protrusion (tuber ischiadicum), the branches of the bone (pubic ram) and the pelvic (endopelvic) fascia. These areas are directly adjacent to the prostate and bladder and can be determined by finding a hyper-measurable site (a myosphalous trigger) that is painful for compression. It is assumed that this area can be associated with mechanical disturbances of the hip and lower extremities, constipation / stress in the toilet, repetitive injuries, severe sports, unusual sexual activity, recurrent infections and operations.

### Clinical features

Careful examination and palpation of external genitals, groin, perineum, vagina, external anal sphincter and internal pelvic walls can highlight certain areas of pain or discomfort. A digital rectal examination should be performed after the patient has produced urine specimens before prostatic massage. The prostate may be of normal size and consistency, and can also be described as enlarged and swollen. The degree of pain caused during prostate palpation is variable, so it is not helpful to distinguish the type of prostatitis. Prostate should be carefully examined before strong prostate massage is performed.

Most patients report dysuria and as urgent, frequent and night urination. Pain or discomfort in the lower back and perineum may be present. According to the nature of the disease, history is marked by a relapse with occasional acute exacerbation, when fever, trembling and maloseness can manifest. There are no characteristic signs in the digital rectal examination. Prostate is often normal to the touch, although sensitivity is mostly presented. Epididymitis can sometimes follow the process. Haematuria, haematospermia and urethral secretions are usually rare.

### Diagnosis

Test of four glasses is standard in diagnostics of prostatitis. The technician collects the first 10 ml of urine (urethral sample), then takes a sample of the mean urinary stream (bladder sample), a prostate secretion sample after prostate massage and ultimately collect the first 10 ml of urine after massage. Alternative tests are urethral swab and sperm analysis. Spermoculture is recommended only if there is a high level of suspicion of chronic bacterial infection, despite the negative urine and EPS culture (greater sensitivity than EPS to gram-negative organism is 97% versus 84%, as well as gram-positive bacteria 100% compared to 16%). If there are no cultured microorganisms and the secretion of prostate has an increased number of leukocytes (> 10 per field of counting), a diagnosis of chronic pelvic pain (inflammatory type) syndrome is done. Despite urine sterility, the pathogen often remains hidden in the prostate, as most antibiotics are poorly diffused into the prostate fluid. Prostate specific antigens (PSAs) can be elevated.

Generally, at least 3-4 months of treatment is recommended, although some studies report the effect of using fluoroquinolone for 4 weeks. Factors that improve antibiotic diffusion in the prostate include lipid solubility, poor binding to plasma proteins. Most of antibiotics are concentrated in urine, which allows lower dosage while maintaining a bactericidal effect. The most common daily treatment are nitrofurantoin (100 mg daily), trimethoprim-sulfamethoxazole (200 mg daily) and ciprofloxacin (250 mg daily). This therapy can provide relief from symptoms in most men.

Transurethral prostatectomy (TURP) is used as an alternative treatment. Surgical therapy often provides the only chance of healing in relapse cases. Studies in which patients undergo transurethral prostatectomy, in chronic bacterial prostatitis, followed by antibiotic therapy from 6 to 8 weeks appear with success (30-100%) (20).

### Complications

Urinary tract infections are a major complication of chronic bacterial prostatitis, which can even lead to sterility. There are cases of successful treatment of prostatitis leading to an improvement in sperm parameters. CBP has a negative influence on the quality of life of patients.

### CONCLUSION

Prostatitis certainly takes a special place in urological practice. In order to determine the etiopathogenesis of prostatitis, it is important to determine the causes that contributed to the development of the disease. Ba-



sed on this, prostate examinations can be directed to further flows that will lead to a final assessment of the patient's condition, as well as a decision on the definitive treatment of the patient.

### Abbreviations

**ABP** — Acute bacterial prostatitis

**CBP** — Chronic bacterial prostatitis

**BHP** — benign prostatic hyperplasia

**PSAs** — Prostate specific antigens<sup>0</sup>

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## Sažetak

# AKUTNI I HRONIČNI PROSTATITIS

Smješko Gordana

University of Novi Sad, Medical Faculty, Department of Microbiology, Novi Sad, Serbia  
Institute of Public Health of Vojvodina, Novi Sad, Serbia

Danas je poznato da su prostatitisi česte bolesti kod muškaraca starosti od 50 godina i takođe čine 1/3 ukupnih uroloških bolesti kod osoba preko 50 godina starosti, a pre nje po stepenu incidencije je benigna glandularna prostatička hiperplazija, kao i karcinom prostate.

Akutni bakterijski prostatitis: **Uopšteni poremećaji:** opšta slabost, temperatura, bol ili osećaj nelagodje u predelu kičme i skrotuma ili u Donjim segmentima kolona. Takođe registruje se učestalo mokrenje, praćeno bolovima. Akutni bakterijski prostatitis se najčeće javlja kod osoba koje su u uzrastu između 20 i 40 godina. Najčešći simptomi su: generalizovana malaksalost i slabost, temperatura, bol kao i osećaj nelagodje između čmara i skrotuma, kao i u donjim segmentima kolona. Dodatno, na navedene simptome, učestalo, bolno i

otežano mokrenje se javlja, kao i povremene urinarne inkontinencije. U slučaju suspektnog akutnog prostatitisa, ispitivanje prostate se odvija u donjim partijama kolona. Prostata je ekstremno palpatorno bolno osetljiva, topla na dodir kao i ponekad „vlažne“ konzistencije. U pojedinim slučajevima, akumulacija leukocita može da se javi u tkivu prostate, koje može dovesti apscesa, koje bi trebalo hirurški tertirati, resecirati i purulentni sadržaj izdrenirati.

**Hronični bakterijski prostatitis:** Zbog prisustva bakterija u tkivu prostate, hronični bakterijski prostatitis može biti povezan sa češćim rekurentnim akutnim cistitisom, ili zapaljenjem mukozne membrane mokraćne bešike. U ovoj bolesti, pacijenti su oslobođeni akutizacije, odnosno akutnih simptoma bolesti.

**Ključne reči:** prostatitis, akutni, hronični.

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### Correspondence to/Autor za korespondenciju

Gordana Smješko

Department of Microbiology, Faculty of Medicine,

Hajduk Veljkova 1-7, 21000 Novi Sad,

University of Novi Sad, Serbia, Institute of Public Health,

Futoška 121, 21000 Novi Sad, Serbia

e-mail: gordana.bojic@mf.uns.ac.rs

Phone: +381 (0) 60 5115771