Prostatitis (Prostate Inflammation) — Diagnosis and Treatment

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Prostatitis is a term that indicates inflammation of the prostate which can be infectious or non-infectious. Bacterial prostatitis is easier to identify clinically and their management is better established. The main diagnostic tools for prostatitis are clinical history and physical examination. Prostate massage by digital rectal examination is only recommended in patients with chronic prostatitis and not in acute bacterial prostatitis. Broad spectrum antibiotics are the mainstay therapy for bacterial prostatitis, while symptomatic treatment is indicated for chronic pelvic pain syndrome without evidence for uropathogens.

Definition of Prostatitis

Different forms of prostatitis exist and they can be classified according to the symptoms’ duration. The table below summarizes the definitions of the different forms of prostatitis.

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<th>Term</th>
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Acute bacterial prostatitis
An acute bacterial infection of the prostate that is characterized by severe symptoms complicated by an acute bacterial urinary tract infection.

**Symptoms**
- Frequent urging to urinate day and night.
- Difficulty to start urination with a lot of strain.
- There is some residual volume of urine in the bladder.

Chronic bacterial prostatitis
A more chronic form of bacterial infection of the prostate; these patients might have prostate-related symptoms but they are usually milder. Recurrent urinary tract infections are common.

**Symptoms**
- The patient feels pain at the base of penis, rectum when passes stool and urine.
- Ejaculation problem
- Erection difficult
- Sometimes the pain may refer to testicles and penis up to the glans penis.
- Symptom of residual volume also present on CBP.

Chronic pelvic pain
Patients with this syndrome complain of chronic pelvic pain, urinary symptoms and possibly voiding symptoms but they do not have bacterial urinary tract infections.

Asymptomatic inflammatory prostatitis
There is true inflammation of the prostate but the patient does not have any urinary symptoms.

Table 1: Definition of different forms of prostatitis

### Epidemiology of Prostatitis

The current estimated incidence of prostatitis is 9%, making it a common condition among men. Only 3% of men have significant prostatitis-related symptoms and seek specific medical attention.

Acute and chronic bacterial prostatitis are the only forms of prostatitis that are well defined by clinical and microbiological features. **Bacterial prostatitis** is responsible for only 10% of all prostatitis cases. Most patients with prostatitis have either **chronic pelvic pain syndrome** or **asymptomatic inflammatory prostatitis**.

### Etiology of Prostatitis

**Ascending bacterial infection** is responsible for acute bacterial prostatitis. **Gram-negative organisms**, such as *Escherichia coli*, Enterobacter and Serratia are responsible for 80% of the cases.

Patients with **voiding dysfunction**, for example, due to **prostate hypertrophy**, might develop a chronic bacterial infection. *Escherichia coli* is the most common implicated organism.

**Primary voiding dysfunction** because of **pseudodyssynergia, impaired detrusor contractility** or **acontractile detrusor muscle**, might also lead to chronic pelvic pain syndrome without bacterial infection. Additionally, patients might develop **non-specific prostatic inflammation**.

### Pathophysiology of Prostatitis

**Urinary tract infections** and **sexually transmitted diseases** with *chlamydia* or *gonorrhea* predispose the patient to ascending urinary tract infections which can affect the prostate. If a biopsy is taken from the prostate while inflamed, **acute inflammatory**
cells infiltrate and chronic inflammatory cells might be identified. Additionally, white blood cells might also be present in the urine.

The presence and degree of inflammatory cells infiltrate on biopsy or in the urine do not correlate well with the severity of prostatitis.

Other organisms, such as cytomegalovirus, have been implicated in prostatitis in HIV-positive patients.

Clinical Presentation of Prostatitis

To summarize the different presentations of prostatitis, it is recommended to classify them into acute bacterial, chronic bacterial, chronic pelvic pain and asymptomatic inflammatory prostatitis.

Acute bacterial prostatitis

Acute bacterial prostatitis is the third most common diagnosis in males after the age of 50 years. Patients usually have severe symptoms, which include lower abdominal pain, dysuria, frequency, irritative voiding, and fever. Abdominal examination, the examination of the external genitalia to exclude possible penile discharge as in gonorrhea, and prostate examination to elucidate prostatic tenderness should be performed. Prostate massage is not recommended because the pain might be very severe. Approximately 5% of cases of acute bacterial prostatitis progress into the chronic bacterial prostatitis.

Chronic bacterial prostatitis

Chronic bacterial prostatitis is caused by Escherichia coli or gram-negative bacteria. Patients might have intermittent mild dysuria, intermittent voiding problems due to obstructive urinary tract disease and a history of recurrent urinary tract infections.

Chronic prostatitis/chronic pelvic pain

The diagnosis and clinical picture of chronic pelvic pain is more difficult to appreciate. Patients are expected to complain of pelvic, perineal, suprapubic or rectal pain for at least 3 months of the last 6 months to fit the diagnosis of chronic pelvic pain.

Patients can also complain of dysuria and incomplete voiding. Erectile dysfunction is common in this group of patients. Patients should not have an episode of urinary tract infection for the last six months.

Asymptomatic inflammatory prostatitis

Patients with asymptomatic inflammatory prostatitis do not have any symptoms or signs of prostatitis.

Diagnostic Work-up for Prostatitis
Acute bacterial prostatitis

*Urinary analysis and culture* are mandatory in these patients. Urine analysis can show white blood cells. Culture studies usually show a single gram-negative organism.

Transrectal prostatic ultrasonography or computerized tomography scan of the prostate is recommended only when initial antimicrobial therapy fails. The goal of imaging is to exclude prostate abscess. Serum prostate-specific antigen (PSA) should not be checked in these patients.

Chronic bacterial prostatitis

![Image: “Digital rectal exam.” by Unknown – This image was released by the National Cancer Institute, an agency part of the National Institutes of Health, with the ID 7136. License: Public Domain](image)

Prostatic fluid analysis for bacterial culture confirms the chronic bacterial prostatitis. The patient has CBP in spite of negative culture report because of insufficient urine collection, if the patient starts antibiotics a few days prior to collect a urine sample. The 4-glass or 2-glass test should be performed in these patients. The 4-glass test includes 10 ml of urine, followed by 10 ml of midstream urine, followed by a glass of prostate secretions after a digital rectal massage of the prostate, finally followed by a post-massage urinary sample. This is considered too complicated for most urologists; hence the two-glass test is usually preferred. The two glass test simply means a pre-massage and a post-massage urinary culture.

Transrectal prostate ultrasonography and semen cultures are not beneficial in diagnosing chronic bacterial prostatitis.

Chronic prostatitis/chronic pelvic pain

The diagnosis of chronic bacterial prostatitis needs to be excluded. Accordingly, a 4-glass or 2-glass test should be used. These patients might have obstructive urinary symptoms and can benefit from urodynamic testing to assess flow-rates, post-void residual and pressure flow studies. These tests also assess detrusor muscle function.
Asymptomatic inflammatory prostatitis
This group of patients is usually not diagnosed because of the lack of the symptoms and because currently there are no recommended investigations to be performed.

Treatment of Prostatitis

Acute bacterial prostatitis
Patients with acute bacterial prostatitis should receive broad-spectrum antibiotics. Combination therapy might include aminoglycosides plus ampicillin, or a third-generation cephalosporin plus a fluoroquinolone for the ill patient. Patients who do not have sepsis can receive oral trimethoprim-sulfamethoxazole or a fluoroquinolone.

Patients with severe urinary obstructive symptoms might need a single catheterization. A prostatic abscess is a possible complication of acute bacterial prostatitis. A prostatic abscess needs surgical drainage.

Chronic bacterial prostatitis
These patients should receive a fluoroquinolone for approximately 6 weeks. Patients with chronic bacterial prostatitis and severe urinary obstructive symptoms might benefit from combining a fluoroquinolone with an alpha-blocker such as doxazosin. Patients with severe obstructive symptoms and recurrent bacterial prostatitis, that is not responsive to antimicrobials, might benefit from surgery to remove the prostate.

Chronic prostatitis/chronic pelvic pain
Management of chronic prostatitis or chronic pelvic pain without evidence for bacterial infection is challenging. Multimodal therapy is currently recommended for these patients instead of a monotherapy.

Patients with depression, anxiety or other psychiatric conditions might benefit from cognitive behavioral therapy, anti-depressants, and anti-anxiolytics.

Patients with confirmed prostatitis by biopsy or who have lower urinary tract obstruction can benefit from alpha-blockers, quercetin, or a prostatectomy.

Antibiotics should not be used unless there is evidence of a previous or recent urinary tract infection.

Patients with chronic pelvic pain might have primary voiding dysfunction due to neuropathy or detrusor muscle dysfunction. Gabapentin, amitriptyline and neuromodulation therapy can help these patients.

Non-steroidal anti-inflammatory drugs can help alleviate the symptoms in a few patients.

Asymptomatic inflammatory prostatitis
Currently, patients with asymptomatic inflammatory prostatitis do not receive any specific therapy.
Complications of Prostatitis

- Bladder outlet obstruction/ urine retention
- Pyelonephritis
- Abscess formation- in immune-compromised patients
- Recurrent cystitis
- Pyelonephritis
- Infertility due to scarring

Prognosis of Prostatitis

Prognosis in patients having the first episode of acute bacterial prostatitis is good. Mortality is associated with urosepsis, in patients with diabetes mellitus, undergoing dialysis for chronic renal failure, in immune-compromised patients, and in post-surgical cases.

References


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