

**ACUTE PROSTATITIS: ETIOLOGY, PATHOPHYSIOLOGY, CLINICAL  
PRESENTATION, DIAGNOSTIC APPROACH, AND CONTEMPORARY  
MANAGEMENT**

*Mansurov Sardor Vali o'g'li*

*Asia International University, Bukhara, Uzbekistan*

**Abstract**

Acute prostatitis is an acute bacterial infection of the prostate gland and represents the most severe form of prostatitis syndromes. Classified as National Institutes of Health (NIH) Category I prostatitis, it is characterized by sudden onset of systemic inflammatory symptoms combined with lower urinary tract manifestations. Although relatively uncommon, acute prostatitis is clinically significant due to its potential to progress rapidly to sepsis, prostatic abscess, or chronic prostatitis if inadequately treated. The condition is predominantly caused by gram-negative uropathogens and requires prompt diagnosis and early initiation of targeted antimicrobial therapy. This review provides a comprehensive overview of the etiology, pathogenesis, clinical features, diagnostic criteria, therapeutic strategies, complications, and prognosis of acute prostatitis.

**Introduction**

Prostatitis encompasses a heterogeneous group of disorders characterized by inflammation or infection of the prostate gland. Among these, acute prostatitis represents the most dramatic and potentially life-threatening clinical entity. It accounts for a small proportion of prostatitis cases; however, its abrupt onset and systemic involvement distinguish it from chronic and nonbacterial forms.

Acute prostatitis can affect men across all age groups but is most frequently diagnosed in younger and middle-aged individuals. The condition often arises in the setting of urinary tract infections, urological instrumentation, or immunocompromised states. Due to the rich vascular supply of the prostate and its anatomical proximity to the lower urinary tract, bacterial invasion may rapidly disseminate, emphasizing the importance of early recognition and aggressive management.

**Etiology**

**Bacterial Causes**

Acute prostatitis is almost exclusively caused by bacterial pathogens. The majority of infections are attributed to gram-negative bacilli originating from the gastrointestinal tract.

The most frequently isolated organisms include:

Escherichia coli

Klebsiella pneumoniae

Proteus species

Enterobacter species

Pseudomonas aeruginosa

Gram-positive organisms such as *Enterococcus faecalis* may also be implicated, particularly in hospitalized or catheterized patients.

### **Routes of Infection**

Bacterial entry into the prostate may occur via several mechanisms:

Ascending infection from the urethra

Intraprostatic reflux of infected urine into prostatic ducts

Direct inoculation during procedures such as catheterization, cystoscopy, or prostate biopsy

Hematogenous spread from distant infection sites, although this route is rare

### **Risk Factors**

Several conditions increase susceptibility to acute prostatitis:

Recent urinary tract infection

Indwelling urinary catheter

Prostate manipulation

Diabetes mellitus

Immunosuppression

Structural abnormalities of the urinary tract

### **Pathophysiology**

The pathogenesis of acute prostatitis involves bacterial colonization of prostatic tissue followed by a vigorous inflammatory response. Invasion of pathogens triggers activation of innate immune mechanisms, leading to infiltration of neutrophils, release of inflammatory cytokines, and increased vascular permeability.

As inflammation progresses, the prostate becomes swollen and congested, which may compress the prostatic urethra and result in urinary obstruction or acute urinary retention. The inflammatory process may extend beyond the prostate capsule, causing pelvic pain and systemic manifestations. If untreated, localized infection may progress to abscess formation or systemic bacteremia.

### **Clinical Presentation**

#### **Systemic Symptoms**

Patients typically present with acute systemic illness, including:

High fever

Chills and rigors

Generalized malaise

Myalgia

### **Lower Urinary Tract Symptoms**

Urinary complaints are prominent and include:

Dysuria

Increased urinary frequency

Urgency

Weak urinary stream

Hesitancy

Acute urinary retention

### **Pain Symptoms**

Pain may involve multiple anatomical regions:

Perineal pain

Suprapubic discomfort

Lower back pain

Rectal pain

Painful ejaculation

### **Physical Examination**

Digital rectal examination is a key component of clinical assessment. The prostate is typically:

Enlarged

Warm

Extremely tender

Boggy in consistency

Prostate massage is strictly contraindicated due to the risk of inducing bacteremia and septic shock.

### **Diagnostic Evaluation**

Laboratory Investigations

Diagnosis is primarily clinical but supported by laboratory findings:

Urinalysis demonstrating pyuria and bacteriuria

Urine culture to identify causative organisms and antibiotic sensitivity

Blood cultures in febrile patients or those with suspected sepsis

Elevated leukocyte count and inflammatory markers such as C-reactive protein

### **Imaging**

Routine imaging is not required. However, imaging studies are indicated in cases of:

Persistent fever despite antibiotic therapy

Clinical deterioration

Suspicion of prostatic abscess

Transrectal ultrasound, computed tomography, or magnetic resonance imaging may be used for evaluation.

### **Management**

#### **Antimicrobial Therapy**

Early initiation of broad-spectrum antibiotics is the cornerstone of treatment. Empirical therapy should provide coverage against gram-negative organisms and be adjusted based on culture results.

Commonly used agents include:

Fluoroquinolones

Third-generation cephalosporins

Aminoglycosides in severe infections

Treatment duration ranges from 2 to 4 weeks, with longer courses recommended to prevent progression to chronic prostatitis.

#### **Supportive Care**

Antipyretics for fever

Analgesics for pain control

Adequate hydration

Bed rest during acute phase

#### **Management of Urinary Retention**

Suprapubic catheterization is preferred when urinary retention occurs. Urethral catheterization should be avoided whenever possible to prevent exacerbation of infection.

#### **Complications**

If inadequately treated, acute prostatitis may lead to:

Prostatic abscess

Sepsis and septic shock

Acute urinary retention

Epididymo-orchitis

Progression to chronic bacterial prostatitis

### **Prognosis**

With timely diagnosis and appropriate antibiotic therapy, the prognosis of acute prostatitis is favorable. Most patients achieve complete recovery. Delayed treatment increases the risk of complications and chronic disease.

### **Prevention**

Preventive strategies include:

Prompt treatment of urinary tract infections

Strict aseptic techniques during urological procedures

Appropriate catheter management

Control of underlying chronic diseases

### **Conclusion**

Acute prostatitis is a serious bacterial infection requiring urgent medical intervention. Recognition of characteristic clinical features, avoidance of prostate manipulation, and early initiation of appropriate antimicrobial therapy are essential for optimal outcomes. Comprehensive management significantly reduces morbidity and prevents long-term complications.

### **References**

1. CHRONIC PROSTATITIS: ETIOLOGY AND TREATMENT. (2025). International Journal of Medical Sciences, 5(12), 729-733. <https://doi.org/10.55640/>
2. COMPARISON OF SURGICAL TECHNIQUES FOR BENIGN PROSTATIC HYPERPLASIA: OUTCOMES AND INNOVATIONS. (2025). International Journal of Medical Sciences, 5(11), 551-554.
3. Mansurov Sardor Vali o'g'li. (2025). Neuro-Oncology in Transition: Molecular Classification and Emerging Therapies for Brain Tumors. International Journal of Integrative and Modern Medicine, 3(10), 233-237. Retrieved from <https://medicaljournals.eu/index.php/IJIMM/article/view/2235>
4. o'g'li, M. S. V. (2025). ESOPHAGEAL CANCER: EPIDEMIOLOGY, PATHOGENESIS, AND MODERN APPROACHES TO MANAGEMENT.

- International Journal of Cognitive Neuroscience and Psychology, 3(9), 59–64.  
Retrieved from <https://medicaljournals.eu/index.php/IJCNP/article/view/2127>
5. Mansurov Sardor Vali o'g'li. (2025). RECENT DEVELOPMENTS IN THE DIAGNOSIS AND TREATMENT OF HEPATITIS: A GLOBAL PERSPECTIVE. <https://doi.org/10.5281/zenodo.15478708>
  6. Mansurov Sardor Vali o'g'li. (2025). URINARY BLADDER CANCER. <https://doi.org/10.5281/zenodo.15227539>
  7. Mansurov Sardor Vali o'g'li. (2025). ACUTE KIDNEY INJURY: ETIOLOGY AND TREATMENT. <https://doi.org/10.5281/zenodo.15070424>
  8. Mansurov Sardor Vali o'g'li. (2025). EPIDEMIOLOGY AND TREATMENT OF RENAL CELL CARCINOMA: IDENTIFYING KEY RISK FACTORS. <https://doi.org/10.5281/zenodo.14909826>
  9. PROSTATE CANCER: PATHOLOGY AND TREATMENT. (2024). International Bulletin of Medical Sciences and Clinical Research, 4(11), 65-70. <https://doi.org/10.37547/>
  10. Mansurov Sardor Vali o'g'li, KIDNEY CANCER: EPIDEMIOLOGY AND TREATMENT , EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE: Vol. 4 No. 11 (2024): European Journal of Modern Medicine and Practice <https://inovatus.es/index.php/ejmmp/article/view/4509>
  11. Mansurov Sardor Vali o'g'li, SQUAMOUS CELL CARCINOMA OF THE PENIS: EPIDEMIOLOGY AND TREATMENT , EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE: Vol. 4 No. 10 (2024): European Journal of Modern Medicine and Practice <https://inovatus.es/index.php/ejmmp/article/view/4245>
  12. Valiyevich, M. S. . (2024). Specific Morphofunctional Characteristics of the Kidney Caused by Brain Damage in Various Emergency Situations. Research Journal of Trauma and Disability Studies, 3(4), 286–289. Retrieved from <http://journals.academiczone.net/index.php/rjtds/article/view/2628>
  13. Bahromov Bekzod Shavkatovich. (2025). UROLITHIASIS: EPIDEMIOLOGY AND RISK FACTORS. <https://doi.org/10.5281/zenodo.15070401>
  14. ANESTHESIOLOGICAL CARE AND INTENSIVE CARE OF GERONTOLOGICAL PATIENTS IN UROLOGY. (2025). International Journal of Medical Sciences, 5(02), 381-384. <https://doi.org/10.55640/>
  15. SOME PROBLEMS OF UROLOGY IN NEPHROLOGY. (2024). International Journal of Medical Sciences, 4(12), 127-130. <https://doi.org/10.55640/>
  16. PREVENTION OF INTRAOPERATIVE COMPLICATIONS OF ENDOVIDEOSURGICAL INTERVENTIONS IN UROLOGY. (2024). International Journal of Medical Sciences, 4(11), 292-295. <https://doi.org/10.55640/>

17. ПУТИ УЛУЧШЕНИЯ КАЧЕСТВА НЕОТЛОЖНОЙ ПОМОЩИ БОЛЬНЫМ УРЕТЕРОЛИТИАЗОМ. (2024). International Journal of Medical Sciences, 4(10), 135-138. <https://doi.org/10.55640/>
18. Bahromov Bekzod Shavkatovich. (2024). Urinary Tract Infection Gonorrhea. SCIENTIFIC JOURNAL OF APPLIED AND MEDICAL SCIENCES, 3(5), 515–517. Retrieved from <https://sciencebox.uz/index.php/amaltibbiyot/article/view/10804>
19. Shavkatovich B. B. . (2024). Urinary Tract Infections. Research Journal of Trauma and Disability Studies, 3(4), 249–251. Retrieved from <https://journals.academiczone.net/index.php/rjtds/article/view/2602>
20. Bahromov Bekzod Shavkatovich. (2025). PROSTATE CANCER: EPIDEMIOLOGY, RISK FACTORS, DIAGNOSIS. <https://doi.org/10.5281/zenodo.15242564>
21. URINARY STONE DISEASE: ETIOLOGY, PATHOGENESIS, AND TREATMENT. (2025). International Journal of Medical Sciences, 5(11), 456-458. <https://doi.org/10.55640/>
22. URINARY TRACT INFECTION (UTI): ETIOLOGY, PATHOGENESIS, DIAGNOSIS, AND TREATMENT. (2025). International Journal of Medical Sciences, 5(12), 735-738. <https://doi.org/10.55640/>
23. Bahromov Bekzod Shavkatovich. (2025). RISK FACTORS AND DIAGNOSIS OF KIDNEY STONE. <https://doi.org/10.5281/zenodo.15515734>
24. Shavkatovich, B. B. (2025). UROLITHIASIS: ETIOLOGY AND DIAGNOSTIC APPROACHES. International Journal of Cognitive Neuroscience and Psychology, 3(9), 39–43. Retrieved from <https://medicaljournals.eu/index.php/IJCNP/article/view/2124>
25. Bahromov Bekzod Shavkatovich. (2025). BENIGN PROSTATIC HYPERPLASIA (BPH). International Journal of Integrative and Modern Medicine, 3(10), 247–250. Retrieved from <https://medicaljournals.eu/index.php/IJIMM/article/view/2238>