

# PATHOGENETIC TREATMENT OF CHRONIC CYSTITIS BASED ON UROTHELIAL BARRIER RESTORATION AND LOCAL IMMUNE MODULATION

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## INTRODUCTION:

Chronic cystitis is a recurrent inflammatory bladder disorder that significantly impairs quality of life, particularly among women aged 25–55 in Uzbekistan. Standard symptomatic and antibacterial therapies provide temporary relief but fail to address underlying pathogenetic mechanisms such as urothelial barrier dysfunction, chronic immune activation, and microbial dysbiosis. Developing pathogenetically oriented treatment strategies is therefore essential for long-term disease control, recurrence prevention, and reduced antibiotic overuse.

### Brief Information on Existing Developments and Their Limitations:

Long-term antibiotic prophylaxis reduces symptom exacerbation but contributes to antimicrobial resistance and does not restore urothelial integrity. Intravesical glycosaminoglycan (GAG) therapy improves mucosal barrier function and reduces symptoms; however, most studies are limited by small sample sizes and short follow-ups. Immunomodulatory approaches show potential in reducing local inflammation but have not been systematically combined with epithelial restoration, particularly in Central Asian populations.

### Results:

A prospective controlled study was conducted at a tertiary urology center, enrolling 78 women with chronic cystitis ( $\geq 3$  recurrences/year, duration  $> 6$  months). Patients were randomized into a control group receiving standard antibiotic therapy (n=39) and a pathogenetic therapy group receiving antibiotics combined with intravesical hyaluronic acid instillations (weekly for 6 weeks, then monthly for 3 months) plus adjunctive oral anti-inflammatory support (n=39). Clinical outcomes included symptom severity (ICSI), pain intensity (VAS), urinary frequency, 6-month recurrence rates, and urinary inflammatory markers (IL-6, TNF- $\alpha$ ). Results demonstrated a 52% reduction in ICSI scores and 56%



reduction in pain in the pathogenetic group versus 25% and 28% in controls ( $p < 0.01$ ). Recurrence rates were 17.9% versus 43.6% ( $p = 0.02$ ), and urinary IL-6 and TNF- $\alpha$  significantly decreased, indicating effective immune modulation. No serious adverse events were reported.

#### Conclusion:

Pathogenetic therapy combining urothelial barrier restoration with local immune modulation significantly improves clinical and biological outcomes in chronic cystitis. This approach reduces recurrence, alleviates symptoms, and offers a safe, feasible treatment model for implementation in Uzbek urological practice, addressing a critical unmet clinical need.

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