MODERN PHARMACOTHERAPY OF URINARY TRACT INFECTION

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The incidence of urinary tract infections (UTI) is much higher in females during adolescence and childbearing years then in males. The incidence of UTI in men approaches that of women only in males older than 60 years; in men aged 65 years or older, 10% have been found to have bacteriuria, as compared with 20% of women in this age group.

UTI can be divided into upper tract infections, which involve the kidneys (pyelonephritis), and lower tract infections, which involve the bladder (cystitis), urethra (urethritis), and prostate (prostatitis). However, in practice, and particularly in children, differentiating between the sites may be difficult or impossible. Moreover, infection often spreads from one area to the other. Although urethritis and prostatitis are infections that involve the urinary tract, the term UTI usually refers to pyelonephritis and cystitis.

Most cystitis and pyelonephritis are caused by bacteria. The most common nonbacterial pathogens are fungi (usually candidal species), and, less commonly, mycobacteria, viruses, and parasites. Nonbacterial pathogens usually affect patients who are immunocompromised; have diabetes, obstruction, or structural urinary tract abnormalities; or have had recent urinary tract instrumentation. Other than adenoviruses (implicated in hemorrhagic cystitis), viruses have no major contribution to UTI in immunocompetent patients.

All forms of bacterial UTI require antibiotics. Choice of antibiotic should be based on the patient's allergy and adherence history, local resistance patterns (if known), antibiotic availability and cost, and patient and provider tolerance for risk of treatment failure. Propensity for inducing antibiotic resistance should also be considered.

First-line treatment of uncomplicated cystitis is nitrofurantoin 100 mg po bid for 5 days (it is contraindicated if creatinine clearance is < 60 mL/min), trimetoprim/sulfamethoxazole 160/800 mg po bid for 3 days, or fosfomycin 3 g po once. Less desirable choices include a fluoroquinolone or a β-lactam antibiotic. If cystitis recurs within a week or two, a broader spectrum antibiotic (eg, a fluoroquinolone) can be used and the urine should be cultured.

Complicated cystitis should be treated with empiric broad-spectrum antibiotics chosen based on local pathogens and resistance patterns and adjusted based on culture results. Urinary tract abnormalities must also be managed.

For treatment of acute pyelonephritis antibiotics are required. Outpatient treatment with oral antibiotics is possible if all of the following criteria are satisfied: patients are expected to be adherent; patients are immunocompetent; patients have no nausea or vomiting or evidence of volume depletion or septicemia; patients have no factors suggesting complicated UTI. Ciprofloxacin 500 mg po bid for 7 days and levofloxacin 750 mg po once/day for 5 days are 1st-line antibiotics if < 10% of the uropathogens in the community are resistant. A 2nd option is usually trimetoprim/sulfamethoxazole 160/800 mg po bid for 14 days.

First-line antibiotics for parenteral therapy are usually renally-excreted fluoroquinolones such as ciprofloxacin and levofloxacin. Other choices such as ampicillin plus gentamicin, broad-spectrum cephalosporins, aztreonam, β-lactam/β-lactam inhibitor combinations, and imipenem/cilastatin are usually reserved for patients with more complicated pyelonephritis or recent urinary tract instrumentation. Parenteral therapy is continued until defervescence and other signs of clinical improvement occur. In > 80% of patients, improvement occurs within 72 h. Oral therapy can then begin, and the patient can be discharged for the remainder of a 7-to14-day treatment course. Complicated cases require longer courses of IV antibiotics with total duration of 2 to 3 wk and urologic correction of anatomic defects.

Careful asessment of patient and in time started pharmacotherapy of UTI will prevent possible chronisation of disease.