Practical Hints in the Management of Urinary Tract Infections

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In the outpatient, primary care setting, the most common type of urinary tract infection encountered by the family physician is an uncomplicated bacterial cystitis.

Patients are usually young, sexually-active females, who present with frequency, urgency, dysuria, sensation of incomplete emptying, malodorous urine, and in more severe cases, gross hematuria. The astute physician should enquire about fever, flank pain, vaginal discharge, and Last Menstrual Period (LMP), which should enquire about fever, flank pain, vaginal discharge, and Last Menstrual Period (LMP), which might be suggestive of a diagnosis other than simple bacterial cystitis. Differential diagnoses should include acute pyelonephritis, vaginitis, sexually transmitted bacterial cystitis. Incomplete emptying, urinary retention, and in more severe cases, gross hematuria. The astute physician should enquire about fever, flank pain, vaginal discharge, and Last Menstrual Period (LMP), which might be suggestive of a diagnosis other than simple bacterial cystitis. Differential diagnoses should include acute pyelonephritis, vaginitis, sexually transmitted diseases, bladder stones or even bladder cancer.

Urine dipstick performed in the office is a worthwhile diagnostic test. While it will not yield the culture and sensitivity results, the presence of nitrites and leukocytes on the dipstick test indicates a more than 80% chance of a bacterial infection. For a first-time, simple cystitis, urine culture and sensitivity studies are probably not cost-efficient. As most patients are symptomatic on presentation, it is not necessary to wait for microscopic urinalysis or culture results before initiating treatment.

80% of outpatient, community-acquired simple bacterial cystitis are caused by E. coli. Pseudomonas, enterococcus, and proteus round out the list of uropathogens. These E. coli are sensitive to most first-line, oral antibiotics. Because of the emergence of resistant strains of pathogens, the physician should be cognizant of the resistance profile of bacteria in the community where he/she practises. The clinical-bacteriology laboratory engaged should provide this resistance profile semi-annually to their physician-clients for reference.

The choice of antimicrobial therapy should take into consideration the efficacy, duration of treatment, side-effects and the cost. Sulfamethoxazole-trimethoprim (SMX-TMP), given as two tablets twice daily for a 3-day course is effective in 95% of uncomplicated bacterial cystitis, and should be given as first-line therapy. For patients with allergy to sulfa medications, trimethoprim 200 mg BID for 3 days is equally effective. Nitrofurantoin is associated with a low resistance profile and is a good alternative. In this locale which has a significant rate of G6PD deficiency, however, special attention should be exercised. Treatment with nitrofurantoin should be extended to 7 days, at 50 to 100 mg QID. Patient compliance is sometimes a problem with this regimen, as they might neglect to take the medication when they start to feel well after a few days. A second generation oral cephalosporin like cephalaxin can also be substituted. These four medications share a unique characteristic in that they are completely absorbed in the stomach and small intestine, then excreted in the urine in high concentrations. While ampicillin and amoxicillin is effective in bacterial eradication, they can cause future bacterial resistance by eradicating sensitive species in the colon.

If symptoms do not subside after 4 to 5 days of medication, persistence of the cystitis due to ineffective antibiotics will have to be suspected. Urine microscopy, culture and sensitivity should then be performed to direct therapy. A second-line antibiotic, such as a quinolone, can be substituted, again only empirically, pending the outcome of the sensitivity study.

Clinical scenarios other than simple cystitis are considered ‘surgical infections’ and are usually associated with structural abnormalities, and should be referred to the urologist for specialist care. These include febrile pyelonephritis (vesico-ureteral reflux), recurrent urinary tract infections in females (diverticulum/colo-vesical fistula), in pregnant women (progression to pyelonephritis, prematurity and low birth weights), in the elderly male (benign prostatic hyperplasia or bladder stones), in infants and children (duplicated collecting system, reflux, posterior urethral valves, phimosis, obstruction or other structural changes) and infections associated with a calculus (staghorn stone from proteus infection or infection behind an obstructive stone).

A special case of acute bacterial prostatitis in men should be mentioned here. They present with the typical irritative symptoms of cystitis, together with perineal pain, high fever, shaking chills, and obstructive symptoms with a poor stream, even acute retention of urine. These men should be admitted for intensive intravenous antibiotics to prevent progression into a relapsing, chronic bacterial prostatitis, where the bacteria reside in the sanctuary area in the prostate, which will periodically cause recurrence of the bacterial cystitis.
Patients with febrile pyelonephritis should be investigated initially with a contrast-enhanced triphasic Computerised Tomographic Intravenous Urogram (CT-IVU), looking for the typical wedge-like defect with hypoperfusion of the contrast. The study should be scrutinised for the presence of stones, urine extravasation or abscess formation. Most patients should be hospitalised for combination intravenous antibiotics, empirically with an aminoglycoside plus a third-generation cephalosporin, pending the outcome of urine and blood cultures. An occasional patient, however, can be treated on an outpatient basis, as the newer types of parenteral antibiotics can be given once-daily, supplemented by an oral quinolone.

For those patients with frequent urinary tract infections, various non-antibiotic therapies have been tried over the years. These include switching from nylon/synthetics to cotton underwear, wiping from front to back, drinking large quantities of water, voiding immediately after intercourse or the use of herbal preparations. These remedies lack the backing of proper scientific studies, and success reports appear only anecdotal. The use of cranberry juice is interesting: there appears to be improvement of infection free period in those taking cranberry juice or extracts. For those with limitations on fluid intake, cranberry concentrate is available in capsule form also.

References

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MCHK CME Programme Self-assessment Questions

Please read the article entitled "Practical Hints in the Management of Urinary Tract Infections" by Dr. Richard K Lo, and complete the following self-assessment questions. Participants in the MCHK CME Programme will be awarded 1 CME credit under the Programme for returning completed answer sheets via fax (2865 0345) or by mail to the Federation Secretariat on or before 31 May 2008. Answers to questions will be provided in the next issue of The Hong Kong Medical Diary.

Questions 1-5: Please choose the best answer.

1. As newer antibiotics are associated with less resistance and probably stronger than older drugs like SMX-TMP, they should be used first in the treatment of uncomplicated urinary tract infections.
   True / False

2. Which of the following is not a likely uropathogen:
   a) E coli
   b) Staphylococcus epidermidis
   c) Pseudomonas aeruginosa
   d) Enterococcus
   e) Proteus mirabilis

3. A urine culture should always be performed in simple urinary tract infections, as it will direct the choice of antibiotics.
   True / False

4. The following are good choice as a first-line treatment for simple urinary tract infections, except:
   a) Sulfamethoxazole-trimethoprim (SMX-TMP)
   b) Trimethoprim
   c) Ampicillin
   d) Cephalexin
   e) Nitrofurantoin

5. 'Surgical urinary tract infections' include:
   a) Honeymoon cystitis
   b) Urinary tract infections related to catheters
   c) Candida vaginitis
   d) Staghorn calculus with proteus infection
   e) Tuberculosis in urine
ANSWER SHEET FOR MAY 2008

Please return the completed answer sheet to the Federation Secretariat on or before 31 May 2008 for documentation. 1 CME point will be awarded for answering the MCHK CME programme (for non-specialists) self-assessment questions.

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Answers to April 2008 issue

Laparoscopic Adrenalectomy


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