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Review

The management of urinary tract infections in octogenarian women

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ABSTRACT

Urinary Tract Infections are common in women of all ages and the incidence increases with age. Whilst they are a common cause of lower urinary tract symptoms in all women they may be associated with increased morbidity in the elderly. Appropriate investigation and treatment in primary and secondary care are essential to effectively manage urinary tract infection and decrease morbidity and hospitalisation rates. Loss of endogenous oestrogen at the time of the menopause is associated with the urogenital atrophy and an increased incidence of urinary tract infection. Consequently vaginal oestrogen therapy may offer a rationale for treatment and prevent of urinary tract infection.

The aim of this paper is to review the clinical management of elderly women presenting with primary and recurrent urinary tract infection.

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Box 1: Definitions of urinary tract infection.

Bacteruria

This is used to describe the presence of small numbers of bacteria in the urine. In a clean-catch freshly voided sample, this represents 10 000 colony-forming units(CFU)/mL.

Significant bacteruria

This term is used to describe the presence of at least 100 000 CFU/mL of urine in a voided midstream clean-catch specimen, or at least 100 CFU/mL of urine from a catheterised specimen.[1] While 20–40 per cent of women with symptomatic UTIs may present with bacterial counts of 100 000 CFU/mL,[2] bacterial counts of 100–10 000 CFU/mL have also been associated with symptoms of cystitis. This may represent the early stages of infection.

Asymptomatic bacteruria

This is used to describe the presence of bacteria in the urine of an asymptomatic woman. Asymptomatic bacteruria is common, the prevalence depends on age, sex, sexual activity and the presence of urological abnormalities. In women it is only diagnosed if the same organism is present in quantities of at least 100 000 CFU/mL of urine in at least two consecutive voided specimens.

1. Introduction

Urinary tract infections (UTI) are common medical conditions accounting for 7–8 million clinic visits, with more than 100 000 hospital admissions in the United States [1] and 21.4% of hospital admissions attributable to infection in Israel [2]. They are more common in women than men with a ratio of 14:1; the reasons being related to anatomical and functional differences. The female urethra is shorter with the distal third contaminated by bacteria from the vagina and rectum. In addition, during intercourse, bacteria are introduced into the urethra and bladder, and voiding may be impaired with increasing age.

A woman's lifetime risk of at least one UTI is around 20 per cent, with a prevalence that is age related, and this increases by 1% per decade of life. The increased incidence of UTI in post menopausal women has been shown to be associated with urinary incontinence, cystocele and post-void residual urine [3]. Urinary tract infections are common in the elderly with a reported incidence of 20% in the community and over 50% in institutionalised patients [4,5]. Pathophysiological changes such as impairment of bladder emptying, poor perineal hygiene and both anal and urinary incontinence may partly account for the high prevalence observed. In addition, changes in the vaginal flora due to oestrogen depletion lead to colonisation with gram negative bacilli which in addition to causing local overactive bladder type symptoms also act as uropathogens. These microbiological changes may be reversed with oestrogen replacement following the menopause, offering a rationale for treatment and prophylaxis.

Lower urinary tract infection represents a spectrum of disease from asymptomatic bacteriuria to acute pyelonephritis [Box 1], may involve the lower or upper urinary tract and may be complicated, associated with an underlying structural abnormality, or uncomplicated.

2. Recurrent lower urinary tract infection

This is defined as three or more episodes of UTI during a 12-month period [6] or two infections in a six-month period. Recurrent UTI with the same organism following adequate therapy is termed a relapse. Reinfection is a recurrent UTI caused by bacteria previously isolated after treatment and a negative intervening urine culture or a recurrent UTI caused by a second isolate [7]. The risk of recurrence of UTI is also age related. In a study of women with age range between 17 and 82 years with *Escherichia coli* cystitis, 44 per cent had a recurrence within one year, and recurrence is more common in older than younger women [8].

Table 1
Common uropathogens in general practice and hospital.

Organism	Community (%)	Hospital (%)
Escherichia coli	77.3	56.3
Proteus mirabilis	4.3	6.3
Enterococcus faecalis	3.8	8.4
Klebsiella pneumoniae	3.5	6.9
Pseudomonas aeruginosa	1.8	3.8

Box 2: Aims of treatment.

- Symptomatic relief,
- microbiological cure,
- detection of predisposing factors,
- revention of upper urinary tract involvement,
- management of recurrence.

3. Pathogenesis

The organisms responsible for UTI are well-established and consistent. *E. coli* is responsible for almost 80 per cent of acute community-acquired uncomplicated infections. *Klebsiella, Proteus* and enterococci are infrequent causes of uncomplicated UTI. The commonly occurring organisms in community practice differ when compared to those found within the hospital environment (Table 1) [9]. In addition, in those women with persistent, or recurrent infections it is also important to consider the fastidious organisms (*Mycoplasma hominis*, *Ureaplasma urealyticum* and *Chlamydia trachomatis*).

4. Management of urinary tract infection

The management of lower urinary tract infection is aimed at treating the current infection and preventing further recurrences [Box 2].

5. Diagnosis

5.1. Symptoms

Women with lower urinary tract infections typically complain of symptoms of cystitis such as dysuria, suprapubic discomfort, frequency, urgency and nocturia and these may be associated with haematuria. While the diagnostic accuracy of clinical assessment of UTI is uncertain, the presence of both dysuria and frequency increases the probability of UTI by 90%. Of these women, approximately 30 per cent will also have an upper urinary tract infection, which may present as loin pain and tenderness. Importantly, in the elderly, urinary tract infections may present with atypical symptoms, such as confusion, deliruim [10] and falls. In addition incomplete bladder emptying secondary to chronic constipation may be associated with recurrent infections and it is essential to enquire about bowel function as well as sexual function if intercourse is recognized as a precipitating factor.

5.2. Signs

Physical examination is usually unremarkable although, in more severe infections there may be pyrexia. Suprapubic or loin tenderness may be the only physical signs. In addition a pelvic

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