NEW TRENDS OF URINARY TRACT INFECTION AND ITS MANAGEMENT

ESSAY

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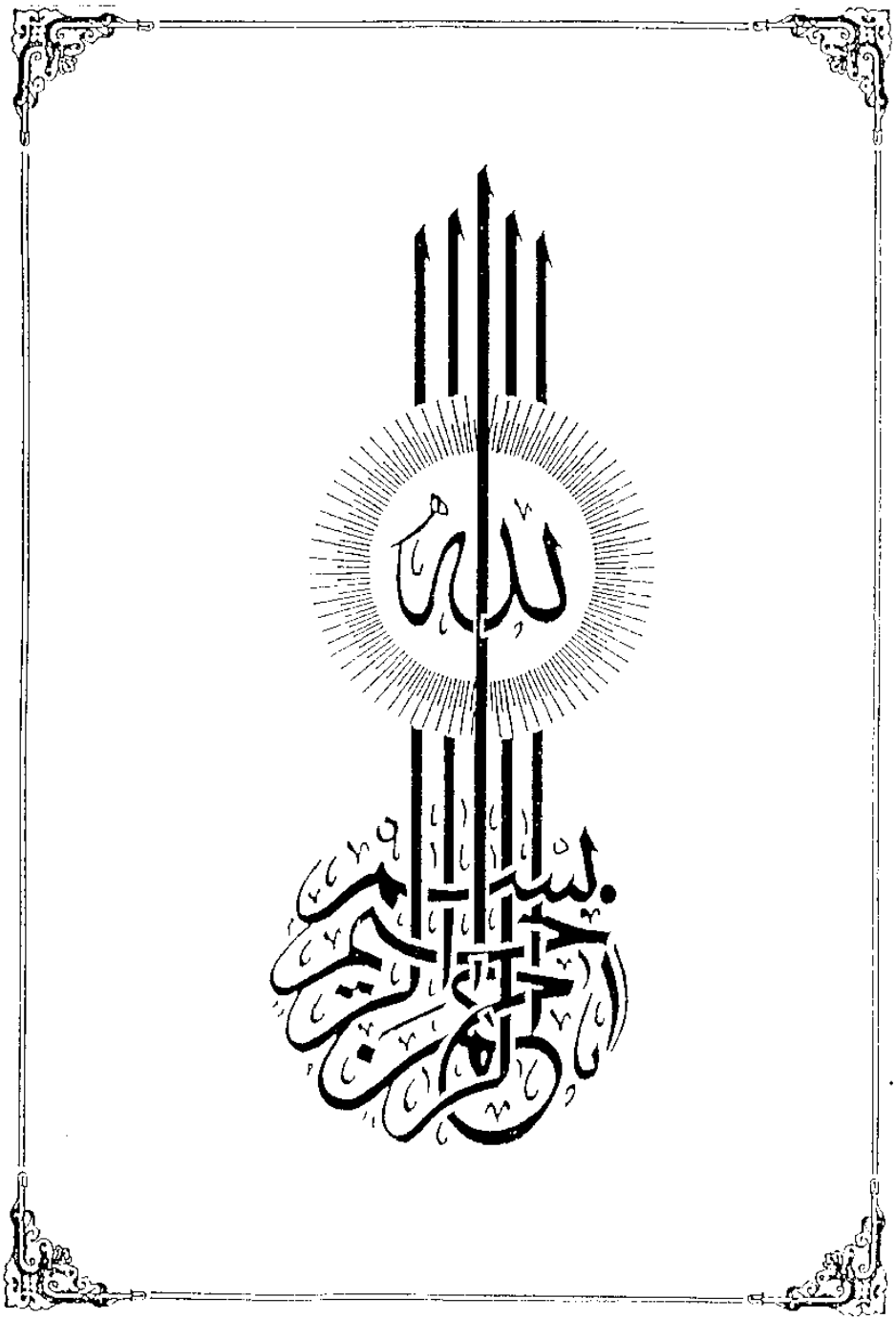
To My Parents ;

Who suffered too much and received too little.



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Introduction And Aim Of Work

The urinary tract is one of the most common sites of bacterial infection in man. Urine is an excellent medium for bacterial growth and organisms are seen to multiply rapidly in a urine sample left at room temperature for any appreciable time *(Sam Frankel, 1970)*.

Most urinary tract infections occur as a result of conditions that affect the structure or function of the genitourinary tract.

The frequency of such infections is associated with the age and sex of the host, reflecting the importance of host factors in the development of an infection *(Jackson et al., 1962; Freedman et al., 1965 & Kunin and McCormack, 1968)*.

The female urinary tract particularly at the lower end, is subjected to a variety of influences resulting in disorders which are seen more commonly than in men because of the morphological difference between the male and female urethra and the effects of menopausal hormone deficiency on the female genital tract *(Alleyene, 1980 and Alan, 1981)*.

The morbidity and mortality of urinary tract infections and its sequelae is high especially among ambulatory patients *(Asscher, 1974)*.

Aim of the work:

This thesis is aimed at reviewing the new trends concerning the diagnosis and management of urinary tract infections.

2

Review of Literature

TERMINOLOGY

The urinary tract is normally sterile. Bacteria may be found for a short distance (only about 1 cm) within urethral meatus in both sexes *(Kamel, 1981)*.

Definitions:

Urinary tract infection: is the presence and multiplication of significant numbers of pathogenic microorganisms anywhere within the urinary tract *(Cluff and Johnson, 1972)*. Also, U.T.I. is bacteriuria with signs or symptoms of inflammation involving the tissues of the urinary tract extending from the renal cortex to the urethral meatus *(Colin, 1968)*.

Bacteriuria: means the presence of bacteria in the urine. This may result from contamination during or after collection or it may indicate the presence of bacteria in the bladder urine *(Asscher, 1982)*. To distinguish between these possibilities, *Kass (1956)* introduced the concept of significant bacteriuria.

Significant Bacteriuria: is defined by *Kass (1957)* as the presence of more than 100,000 (10^5) organisms per milliliter in freshly voided urine. He believed that any bacterial count less

than 10^5 organisms/ml indicated simple contamination and was not indicative of true infection.

Significant bacteriuria can occur with or without pyuria and can be symptomatic or asymptomatic *(Blowers, 1979)*.

In symptomatic subjects, the presence of even lower numbers of organisms, 200 to 1,000 bacteria/ml in catheterized or aspirated suprapubic samples of urine have been considered indicative of U.T.I. *(Baily and Scott, 1974)*.

Covert bacteriuria: previously known as asymptomatic bacteriuria (ABU). It is a significant bacteriuria which is found during the screening of apparently healthy people *(Shasnson, 1982)*. So, the term screening bacteriuria is preferred by *Winberg (1986)*.

Pyuria: Tapsall et al. (1975) define the presence of 10 or more pus cells/ml in uncentrifuged urine sample as pyuria.

Some workers considered that more than 5 pus cells/H.P.F. of centrifuged urine were suggestive of U.T.I. *(Evans, 1969 and Baily, 1970)*.

The presence of persisting pyuria is n important indication of urinary tract infection *(Hendry, 1976)*.

Sterile pyuria: ***Hauvir et al. (1974)*** described sterile pyuria a condition in which more than 10 pus cells/H.P.F. are present in uncentrifuged urine with no obvious bacterial cause.

Sterile pyuria is classically associated with tuberculosis of urinary tract and in cases with stones, local tumors in the urinary tract and certain systemic diseases such as systemic lupus erythematosus ***(Hendry, 1976)***.

Pyuria may also due to bacterial L-forms and in these cases, sterile pyuria may be diagnosed due to failure of growth of these forms of organisms on the usual culture media ***(Lauria et al., 1967)***.

Recurrent U.T.I.: is generally defined as repeated symptomatic episodes of U.T.I. with symptom-free intervals ***(Ogra and Faden, 1985)***.

Reinfection: It is a recurrence of bacteriuria after treatment due to an organism different from that originally isolated ***(Blowers, 1979)***. 99% of recurrent U.T.I. in females are reinfections ***(Winberg, 1986)***.

Relapse: Post-treatment recurrence of bacteriuria due to the same organism as that originally isolated, it usually occurs within 6 weeks of cessation of treatment ***(Blowers, 1979)***.

Incidence of U.T.I.:

Infection is the most common disease of the urinary tract and represents 75% of patients treated by urologists *(Carvajal et al., 1974).*

It has been estimated that approximately 10% of humans are afflicted with a U.T.I. at sometime during their lives *(Sherries et al., 1986).*

The reported incidence in children during their first ten years of life was about 1% for boys and 3% for girls *(Winberg et al., 1974).*

In certain areas endemic for schistosomiasis, the prevalence in boys may be as high as 5% *(Laughlin et al., 1978).* Chronic U.T.I. may end in renal scarring and the reported incidence was 13% for boys and 4.5% for girls following their primary U.T.I. *(Winberg et al., 1974).*

In men, infections are uncommon, with a prevalence of about 1% at the age of 60 *(Freedman et al., 1965). Jackman et al. (1975)* found that prostatic hypertrophy increased the incidence of U.T.I. in males.

The exact incidence in females is still unknown but it has been estimated by ***Kass et al. (1965)*** that 10-20% of the female population acquire bacteriuria at sometime during their lives.

Recurrence of infection was reported to occur in 30% within a year and after two infections about 60% suffer further recurrences ***(Winberg et al., 1974)***. ***Stamey (1972)*** mentioned that over 90% of recurrent U.T.I. in girls are reinfections with different serogroups of E. coli.

In ***Kunin's studies (1960, 1962, and 1965)*** on school children, 1.2% of the girls were found to have asymptomatic bacteriuria, while only 0.03% of the boys screened had a positive urine culture. In adult women during the child bearing age, the incidence of asymptomatic bacteriuria ranges from 4% to 10% found to be higher in older age groups.In another study, asymptomatic bacteriuria was manifested in 6% of non-pregnant women and in 11% of pregnant women ***(Kass, 1957)***. It was believed that as many as 50% of the patients with asymptomatic bacteriuria have had previous symptomatic U.T.I. ***(Ogra and Faden, 1985)***. In males, asymptomatic bacteriuria is almost always secondary to chronic prostatitis or any other form of urinary tract obstruction ***(Youmans, 1975)***.

Many different expressions have been used to describe the various forms of urinary tract infections e.g., non-specific

infection, specific infection, uncomplicated (medical) infection and complicated (surgical) infection.

Non-specific infections of the genitourinary tract are a group of diseases having similar manifestations and caused by the Gram negative rods e.g. (Escherichia coli, Proteus vulgaris) and Gram positive cocci e.g. (Streptococci and Staphylococci). They are to be distinguished from infections caused by specific organisms, e.g., Mycobacterium tuberculosis, Neisseria gonorrhea and actinomycosis. In acute infection, a single organism is usually found, mixed infections are often seen in chronic stages. Infections may involve any part of the urinary tract extending from the renal cortex to the urethral meatus. Infection may be expressed predominantly at a single site, such as the kidney (pyelonephritis), the ureter (pyelitis), the bladder (cystitis) and the urethera (urethritis). The entire system is always at risk of invasion by bacteria once part is infected *(McHenry and Hawk, 1974)*.

The term uncomplicated (medical) infection is used to describe urinary tract infection in which no underlying structural or neurological lesions are present. These infections generally respond well to chemotherapy, while the term complicated (surgical) infection is used to describe situations in which the urinary tract has been invaded by bacteria repeatedly leaving residual