Urinary Tract Infections- Experience with Lomefloxacin

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A randomised study was conducted to see the efficacy and safety of Lomefloxacin in the treatment of complicated urinary tract infections. A total of 30 patients were included in the study. Males were 14 (46.7%), while females were 16 (53.3%).Their mean age was 39.6 years (range 18-65 years). Chronic renal failure of unknown etiology was present in 7, diabetic nephropathy in 7, chronic glomerulonephritis in 5, chronic pyelonephritis in 3, obstructive nephropathy due to stones in 2, and 2 cases were post renal transplant. 2 patients had Lupus nephritis, whereas there were two patients with hereditary nephritis. E.coli was the most frequently isolated organism, (43.3%), followed by Proteus (23.3%), Staph aureus (13.3%) Klebsiella (10%). Streptococcus faecalis, Pseudomonas and Acenitobacter were isolated in 3.3% each. At the end of the treatment, 19 patients (63.3%) had complete cure, clinical improvement occurred in 10 patients (33%). There was failure to relieve symptoms in 1 patient (3.3%). The drug was well tolerated and found to be effective in the management of complicated urinary tract infection.
Key Words: Urinary tract infections, Lomefloxacin, UTI.

Urinary tract infections (UTI) are amongst the common infections that occur in all age groups. These are more prevalent in females. [1,2,3] Each year around 20% females develop urinary tract infections [4]. UTI is also the most common nosocomial infection with a reported rate of 12.9 cases per 1000 hospital discharges in the literature[5]. UTI is a major cause of considerable morbidity and mortality due to septicemia.

The problem is often recurrent and repeated courses of antibiotics are needed in some patients. About 25-30% of E.coli has become resistant to conventional oral therapies. Sulphonamides and aminopenicillins no longer provide optimal response[6]. Although large number of microbial agents are available to treat UTI with many claims of superior activity and efficacy, but increasing bacterial resistance makes the choice difficult. Lomefloxacin is a fluroquinolone antimicrobial agent and we describe our experience with this drug in complicated UTI.

Objective of the study

The objective was to evaluate the efficacy and safety of Lomefloxacin in the treatment of complicated UTI.

Patients and methods

Inclusion Criteria

1. Patients considered to be having complicated UTI due to obstructive uropathy, neurogenic bladder, Calculus disease, Enlarged prostate, chronic pyelonephritis, polycystic kidney disease and history of catheterisation or instrumentation were included in the study.
2. Patients with at least two of the following symptoms & signs of UTI i-e, dysuria, urgency, Frequency of micturition, haematuria, renal angle pain or tenderness, pyuria, fever, suprapubic pain and positive urine cultures.

Exclusion criteria

Terminally ill patients, Patients on concomitant antibiotic therapy, patients with history of allergy to quinolones, patients with history of convulsive disorder, patients infected with organisms not sensitive to the drug, patients who had received other antibiotics in last 4 weeks and lactating or pregnant women were excluded from the study.

After detailed history of symptoms of urinary tract each patient had complete physical examination. Clean catch midstream or catheterised urine specimens from patients suspected to have UTI and urinary white cell count > 8/high power field were inoculated on CLED medium. Isolated organisms were identified and urine cultures were considered positive if colony count was 10^5/ml or more. Sensitivity to various antibiotics was determined with modified disc diffusion method. Treatment with Lomefloxacin was started. Lomefloxacin two 200mg tablets (400mg/day) were given orally daily as a single morning dose for 7-10 days. The dose of Lomefloxacin was reduced to half, in patients having GFR <30ml/min.

Urine cultures were repeated on 4th and 8th day of treatment. Blood urea, serum creatinine estimation was done to assess level of kidney function. and complete blood examination to see degree of leucocytosis. Patients were evaluated for clinical improvement and for any possible side effects and cultures were repeated.

Results

A total of 30 patients 14 male (46.7%) and 16 females (53.3%) were enrolled in the study. Their mean age was 39.6 $\pm$ 25.8 years, (Range 18-65 years).See Table 1. Primary diagnosis was chronic renal failure of uncertain etiology in 23%, diabetic nephropathy in 23%, chronic glomerulonephritis in 16% chronic pyelonephritis in 10%,

systemic lupus erythematosus, hereditary nephritis, nephrolithiasis and renal transplantation in 7% each. See Fig.1

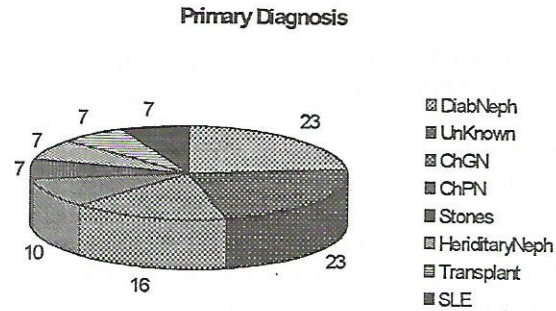

Fig. 1. Primary diagnosis of patients

Table 1:-Demographic data of the patients

Total Patients	30
Male	14
Female	16
Mean Age	39.5± 25.8 years
Age range	18-65 years

All the thirty patients were able to complete the trial; Frequency of various symptoms and signs is shown in Fig. 2. Dysuria was the most frequent symptom followed by fever and frequency of micturition. History of catheterisation was present in 11 patients (36.7%) while 3 patients (10%) had undergone urogenital tract surgery. Urinary pathogens identified are shown in Fig. 3. E.coli was the most commonly identified pathogen being present in 50% patients, 3 patients had growth of two pathogens at the same time.

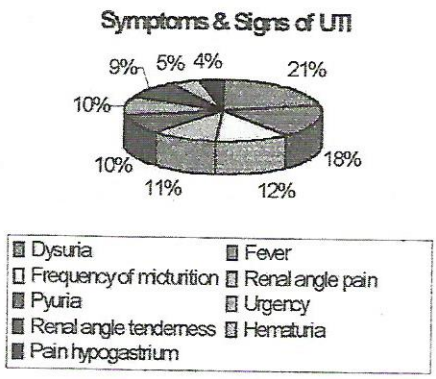

Fig. 2. Frequency of signs and symptoms of UTI.

Mid treatment bacteriological response was seen in 16 patients & response at the end of treatment was seen in 25 patients. Five patients continued to have positive cultures at the end of treatment (Fig.4). However symptoms improved despite persistence with E. coli infection. Clinical response was cure in 19 (64%), improvement in 10 (33%), and no improvement in 1 (3%).(Fig.5).

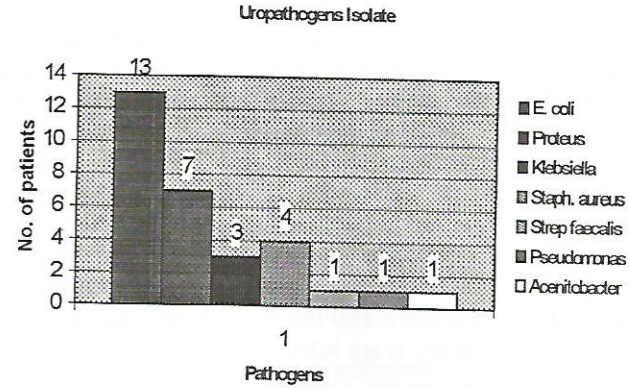

Fig. 3. Uropathogens isolated

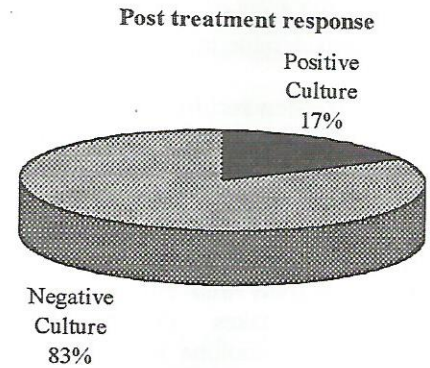

Fig.4. Post-treatment bacteriological response.

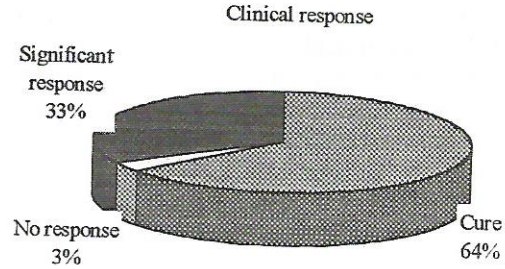

Fig.5. Clinical response after treatment.

The drug was well tolerated in majority patients, no side effects were noted in 24 patients. Two patients complained of palpitations, restlessness and insomnia. One patient complained abdominal pain. The drug had to be withdrawn due to restlessness and palpitations in 1 patient after 4 days.

Discussion

Urinary tract infection is a common medical problem, and the diagnosis is often not difficult to make. The patient usually has specific complaints of burning micturition, dysuria, renal angle pain and fever. Microscopic urine examination and culture reports lead to clear-cut diagnosis. The decision to treat is based on combination of these factors. However asymptomatic patients may also require treatment. Females are more prone to get UTI as compared to males because of anatomical and physiological factors. The length of female urethra is smaller and it lies in the close proximity of the introitus, and the area is usually wet. The microorganisms have an easy access from vagina to urethra and then bladder during intercourse. Altered anatomy and pressure by the gravid uterus in the urinary bladder during pregnancy may predispose to stasis of urine and incomplete evacuation. Moreover there is some degree of hydroureter and hydronephrosis resulting from effects of progesterone on the uterine smooth muscle and it also favours an environment for bacteria to travel up and stasis promotes their multiplication.

The urinary tract infections are categorized into simple when patient is otherwise normal or complicated when integrity of voiding mechanism is impaired, if there is obstruction or a foreign body is present. In addition history of urogenital operation, instrumentation or presence of diabetes mellitus, bladder dysfunction, immuno-suppression or polycystic disease also predisposes to infections which are not always easy to treat. Therefore outcome of urinary tract infections depends upon type of patient, clinical characteristics of invading organisms and extent of tissue invasion.[7].

The pattern of community based UTI is different from Nosocomial and complicated UTI. E. coli causes most urinary tract infections (80%) in the community. Second commonest cause is Staphylococcus, whereas in complicated UTI, Klebsiella, Proteus, Enterobacter, Acenitobacter and Pseudomonas are common. Most of these infections are recurrent and unresolved.

Penicillins have been used in the past but the problem of beta lactam resistance limits their use. Sulphonamides cause allergic reactions in many individuals. Cephalosporins are effective because of their high urinary concentrations. For the last few years fluroquinolones have become available for the treatment of urinary tract infections.

Quinolones are bactericidal and act through inhibition of DNA gyrase of the bacteria.[8]. Their wide range of antimicrobial activity includes activity against enterobactericae and Pseudomonas[9]. They are also useful for infections otherwise requiring hospitalisation for parenteral therapy [10]. Different fluroquinolones have different properties depending upon their structure. Lomefloxacin is a diflorinated quinolone that is highly active against nearly all enteric pathogens, fastidious organisms, methicillin resistant staph aureus, Legionella, Ureaplasma species, Chlamydia trachomatous, Mycoplasma, Pseudomonas and Acinitobacter. The absorption from gut is almost complete[11].

In a hospital-based study of 2870 patients [12], a significant number of patients showed resistance to earlier antibiotics e.g., Ampicillin, Amoxicillin, Co-trimoxazole, pipemidic acid and Gentamicin. Out of these, highest resistance was shown to Co-trimoxazole. Therefore quinolones make a very good choice for treating urinary tract infections and our experience of treating complicated urinary tract infections with lomefloxacin is encouraging.

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