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Urinary Tract Infection among Urogenital Fistula Patients at Abbasi Shaheed Hospital, Karachi, Pakistan

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ABSTRACT

Introduction: Urinary tract infections are common in women of developing countries which results in substantial morbidity and health care cost. The Urogenital fistula is frequently related to gynecological conditions. **Material & Methods:** This is a prospective study was carried out in the Department of Nephrology, Abbasi Shaheed Hospital from March 2011 to May 2014. 79 patients with uro-genital fistula, irrespective of cause of the fistula, with ages between 18–60 years were included in this study. Patients were referred to nephrology clinic. A detail medical history was taken from each patient for episodes of urinary tract infection and the treatment given during the last six months. Patients were educated how to collect midstream morning urine sample. Urine sample were taken from all symptomatic and asymptomatic patients for culture examination and send to laboratory within an hour. **Results:** We have found that out of 72 patients studied for UTI, 89 percent of the studied patients had culture proven UTI. Recurrent UTI is very common in patients with uro-genital fistulas and 72 percent of patients experienced an average of 03 episodes of symptomatic UTIs during last six months. Relapses are more frequent than re-infections. Culture proven but asymptomatic infections were seen in 39 percent of patients. Mean infectious episodes rate during last six months was 3. 73 percent of the observed episodes were symptomatic, while asymptomatic bacteriuria was seen in 27 percent of patients. The most frequent Bacteria is E. coli followed by Pseudomonas aerugenosa and Enterobacter species. These were the most common pathogen isolated which are highly resistant to Amoxicillin, Cotrimoxazole, Fluoroquinolones and Cephalosporins. We found that the isolated pathogens are mostly sensitive to Piperacillin-Tazobactam and Carbepenem groups of Drugs. **Conclusion:** We concluded that Urogenital fistula in developing countries are most regularly linked to Gynecological surgery whereas in developing countries, complicated childbirth is the most common cause. Recurrent infections are more frequent in patients with urogenital fistula and mostly represent relapse rather than re-infection. Relapsing infection warrants extensive evaluation of urinary tract and extended period of antimicrobial therapy with appropriate antibiotics. **Key words:** Urogenital Fistula, Urinary Tract Infection, Antimicrobial Therapy.

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INTRODUCTION

Urinary tract infections (UTIs) are common in women, result in substantial illness and health care costs in persons of all ages. It is also a worrisome management problems for clinicians. Urinary tract infection in adults can be categorized into six groups; (i) Young women with acute uncomplicated cystitis, (ii) Young women with recurrent cystitis, (iii) young women with acute uncomplicated pyelonephritis, (iv) Adults with acute cystitis and renal involvement, (v)

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Complicated UTI [strictures, stones, malignancies, uro-genital fistulas] and (vi) Asymptomatic bacteriuria.

A complicated UTI is one that is associated with a condition that rises the risk for serious complications or treatment failure. It is imperative to distinct between complicated and uncomplicated UTI because of its implications on treatment. It effect pre-treatment and post-treatment evaluation, type and duration of anti-microbial treatment, and the extent of evaluation of the urinary tract that is required. In women, uro-genital fistula is an important cause of complicated UTI.

The etiology of uro-genital tract fistulas varies geographically. The developed countries like United States and other, fistulas are typically linked to severe pelvic pathology, gynecologic surgery, radiation therapy, or injuries incurred in the healing process. In contrast, uro-genital fistulas in developing countries are usually associated with childbirth. In a study at Mayo Clinic (1970 to 1985), 303 women with uro-genital fistulas were seen, gynecologic surgery was responsible for 82 percent of cases, obstetric procedures for 8 percent, irradiation for 6 percent, and trauma or fulguration for 4 percent of cases[1]. In a similar series of 126 cases of genitourinary fistulas, 91 percent followed surgery, primarily abdominal hysterectomy for benign disease[2]. In Northern Nigeria (where one doctor is present for every 200,000 persons) it is observed that 97 to 98 percent of uro-genital fistulas resulted from obstructed labor[3]. In the United States, estimates of uro-genital fistula development range from fewer than 0.5 percent after simple hysterectomy to 10 percent following radical hysterectomy. Surgical repair is readily accessible and usually successful. In developing countries, vesicovaginal and other urogenital fistulas are estimated to occur in 2 percent of obstructed labors[4]. An obstructed labor can take days to resolve. Prolonged compression of maternal soft tissues between the fetal head and maternal pelvis leads to ischemia, necrosis, and sloughing, resulting in uro-genital fistula. The overall burden of urogenital fistulas in the unindustrialized world is enormous, with significant social segregation and ongoing human suffering among those affected.

Even after successful closure of the fistula in these patients, over 60 percent have serious problems called the obstructed labor injury complex which includes foot drop from lumbosacral or common peroneal nerve injury, amenorrhea and secondary infertility, vaginal stenosis, stress urinary incontinence, recurrent urinary tract infection, fecal incontinence, and dyspareunia[5]. Since most victims in these areas are adolescents, the disabilities are often life long. The patients in industrialized countries with successfully repaired ureteral fistulas and bladder usually have no enduring difficulties. While patients of developing countries complications like incontinence often continues due to injury of bladder neck and urethral sphincter. Also, complications such as abnormal detrusor activity, UTIs, and chronic pyelonephritis leading to renal insufficiency.

Objective

To evaluate the frequency and pattern of urinary tract infections in patients with uro-genital fistula admitted to Abbasi Shaheed Hospital, Karachi, Pakistan.

MATERIALS & METHODS

This is a prospective study was carried out in the Department of Nephrology, Abbasi Shaheed Hospital from March 20011 to May 2014. 79 patients with uro-genital fistula, irrespective of cause of the fistula, with ages between 18–60 years were included in this study.Patients were referred to nephrology clinic. A detail medical history was taken from each patient for episodes of urinary tract infection and the treatment given during the last six months. Patients were educated how to collect midstream morning urine sample. Urine sample were taken from all symptomatic and asymptomatic patients for culture examination and send to laboratory within an hour.

RESULTS

We have found that out of 72 patients studied for UTI, 89 percent of the studied patients had culture proven UTI. Recurrent UTI is very common in patients with uro-genital fistulas and 72 percent of patients experienced an average of 03 episodes of symptomatic UTIs during last six months. Relapses are more frequent than re-infections. Culture proven but asymptomatic infections were

seen in 39 percent of patients. Mean infectious episodes rate during last six months was 3. 73 percent of the observed episodes were symptomatic, while asymptomatic bacteriuria was seen in 27 percent of patients. The most frequent Bacteria is E. coli followed by Pseudomonas aerugenosa and Enterobacter species. These were the most common pathogen isolated which are highly resistant to Amoxicillin, Cotrimoxazole, Fluoroquinolones and Cephalosporins. We found that the isolated pathogens are mostly sensitive to Piperacillin-Tazobactam and Carbepenem groups of Drugs.

Table 1: Symptomatic UTI versus asymptomatic bacteriuria

Total no: of patients	79
Percent of patients with culture proven UTI	89
Percent of patients with symptomatic UTI	73
Percent of patients with asymptomatic bacteriuria	27

Table 2: Relapse versus Re-infection

Mean episode of infection per patient during last six months	03
Percent of relapse	62
Percent of re-infection	38

Table 3: Pathogen isolated

Pathogen	Percent
Esherica coli	44
Pseudomonas aeruginosa	21
Enterobacter species	14
Proteus mirabilis	11
Enterococci	07
Others	03

Table 4: Pathogen sensitivity to antibiotics

Amoxicillin	1.6 %
Trimethoprim-sulfamethoxazole	3.3 %
Fluoroquinolone	5.0 %
Cephalosporin	6.7 %
Nitrofurantoin	13.5 %
Pipercillin-Tazobactam	93.7 %
Imipenem	97.6 %
Pan-resistant organism	3.2 %

Table 5: Percent sensitivity of pathogen to antibiotics

Pathogen	Amoxicillin	TMP/SMZ	Quinolone	Cephalosporin	Nitrofur a-ntoin	Pipercillin-Tazobactam	Imipenem	Pan-resistant
E-Coli	0%	0%	1.4%	2.7%	6.3%	93.4%	97.8%	0.65%
P. Aueroginosa	0%	0.6%	2.1%	1.8%	2.2%	95.1%	94.9%	1.1%
Enterobacter	0.7%	1.2%	0.8%	1.9%	2.4%	96.1%	98%	0%
Proteus miralibis	0%	0.8%	0.7%	0.2%	1.2%	93.9%	96.6%	1.4%
Enterococci	0.9%	0.7%	0%	0.1%	1.4%	90.1%	97.9%	0.05%

DISCUSSION

Urinary tract injuries are reported in approximately 1-5 percent of women who experience obstructed labour and pelvic surgery[6]. Intraoperative finding of injury permits quick repair. Delayed diagnosis of urinary tract injuries is of greater apprehension, since they may result in genitourinary fistula formation and recurrent urinary tract infections[7].

Most infections were Re infection rather than relapse. It is useful to try to distinguish clinically between relapse and re-infection because relapsing infection warrants more extensive urologic evaluation, longer therapy, and, in some cases, surgery.

The purpose of the present study is to assess the frequency and pattern of urinary tract infections in patients with uro-genital fistulas. The adhesion of bacteria onto mucosal or urothelial cells is a significant pathogenesis in defining bacterial virulence. It is the ability of bacteria to attach and colonize the gut, urethra, perineum, bladder or renal pelvis, calyces or interstitium [8]. In condition like recurrent cystitis and infection in urogenital fistulas and indwelling bladder and catheters as shown in our study where 89 percent of patients had culture proven UTI adhesion played a vital role. Asymptomatic bacteriuria was seen in 27 percent of patients. Treatment of asymptomatic bacteriuria is appropriate for pregnant women and for patients undergoing urologic procedures in which mucosal bleeding is predicted.

The first UTI is caused by Escherichia coli followed by a second UTI was more often than was a non-E. coli first UTI. Only 5.08% of all infections were followed by an infection-free interval of six months. Relapses were more frequent than re-infections and 62 percent were classified as relapses arising within two weeks of the index episode. 38 percent of the patients had re-infections. E. coli caused 44% of the recurrent episodes. There is concern about empiric consumption of trimethoprim /and TMP-SMX and amoxicillin in areas with high prevalence of resistance. A number of studies have addressed this issue in women with recurrent urinary tract infections and almost all of isolated pathogens demonstrate in vitro resistance to ampicillin and trimethoprim and/or TMP-SMX; these agents generally should not be used for empiric therapy.

The occurrence of resistance to nitrofurantoin among E. coli is about 95 percent, and non-E. coli uropathogens are often resistant. Quinolone resistance is linked to community prescribing practices. In a retrospective study including a population of approximately 167,000 persons, quinolone restriction led to increase in quinolone susceptibility of E. coli urine isolates. The proportion of E. coli quinolone resistance ranged from 14 to 9 percent during months of highest and lowest quinolone use, respectively. The improved susceptibility pattern upturned when quinolone consumption rose.In our study only 5% of uropathogen are sensitive to quinolone indicating prevalence of very high resistance to quinolone in this region. The proportions of infecting strains resistant in vitro to pipercillin and imipenem was found to be less than 5% in the studied population and should be consider the drugs of choice in these patients. It is of great concern that approximately 3% of isolated organism are resistant to all antibiotics.

CONCLUSION

We concluded that Urogenital fistula in developing countries are most regularly linked to Gynecological surgery whereas in developing countries, complicated childbirth is the most common cause [9-11]. Recurrent infections are more frequent in patients with urogenital fistula and mostly represent relapse rather than re-infection. Relapsing infection warrants extensive evaluation of urinary tract and longer duration of antimicrobial therapy with appropriate antibiotics[12].

Limitations

Study is limited in its approach as data from only Nephrology Departments of Abbasi Shaheed Hospital were gathered and thus the study is not indicative of all the hospitals of Karachi.

Recommendations

We strongly recommend early referral to a nephrologist for prompt diagnosis and treatment is important in preventing further complications of urinary tract infections.

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