

Study Aerobic Microbial Causes of Urinary Tract Infection in Al- Diwanyia

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Abstract

Urinary tract is one of the most common sites of microbial infection. Various types of microbes may be the causative. About 392 sample of positive bacteruria patiens in Al-Diwanyia Delevary and Children hospital, these samples showed a high prevelance of woman 68.11% than men 31.88% the most common pathogen was *E. coli* about 70.5% while *Proteus* spp. was 15.8%, *Candida* spp. 6.12% *Staph aureus* 4.33% *Pseudomonas aerugenosa* 1.53%, *Streptococcus* spp. 0.76%, *Klebsiella* spp. 0.5% and *Enterobacter* spp. was 0.5%. These results reflect a similar result obtained by previous studies. Immunological evaluation indicated a clear increment in serum levels of IgG and IgA, while IgM levels were decreased significantly. Cytokines profile showed that TNF- α and TNF- β increased significantly in comparison to the healthy control group.

Introduction

The urinary tract is one of the most commonest sites of bacterial infection. The incidence of UTI is higher among females 10-20% although the majority of infections are acute and short lived, they contribute to significant amount of morbidity in the population, sever infections result in loss of renal function and serious long term sequelae,. In females the distinction is made between cystitis, urethritis and Vaginitis, but the genitourinary tract is a continuum and symptoms, often overlap(1). UTI generally reveals a urinary tract lesion that must be identified by imaging and must be

treated to suppress the cause of infection and prevent recurrence, UTI can be restricted to the bladder(essentially in females) with only superficial mucosal involvement, or it can involve a solid organ(the kidneys in both genders, the prostate in male), Clinical signs and symptoms, hazards, imaging, and treatment of various types of UTI differ(2).in addition, the Patients background helps to further categorize of UTI according to age, type urinary tract lesion and occurrence of immuno compromised Patient, especially with diabetes or pregnancy(1,2), such various forms of UTI explain the wide spectrum of treatment modalities, which range from ambulatory, single dose antibiotic treatment of simple cystitis. In young females, to rescue nephrectomy for pyonphrosis in adiabetic with septic shock(3).

Principle pathogens of urinary tract infection UTI are enterobacteriaceae with a high predominance of *Escherichia coli*(1,2) bacterial infection is usually acquired by the ascending route from the urethra to the bladder and may proceed to the kidney(1,4).

Occasionally bacteria infecting the urinary tract the blood stream to cause septicaemia less commonly infection may result from haematogenous spread of an organism to the kidney(5). Other Member of enterobacteraceae are *Proteus mirabilis* is often associated with urinary stones (calculi)(2,4). *Klebsiella*, *Enterobacter*, *Serratia*, and *Pseudomonas aeruginosa* are frequently found in hospital acquired UTI while *Staphylococcus saprophyticus*, *Staphylococcus epidermidis*, and *enterococcus*(1,2,5,7).

In addition to these genera *Sreptococcus faecalis*, *Citrobacter freundis* and *Acentobacter* were been documented by(6). The most frequent acuses of UTI in Al-Diwaniya city chelidren were *E. coli* 36.09%, *Klebsiella* spp. 18.25%, *Enterobacter* spp. 13.27%, *Pseudomonas aerugenosa* 2.48%, *Enterococcus faecalis* 1.65 %. *Acentobacter* 0.8%, *Proteus* spp. 17.42% and *Staphylococcus aureus* 5.08%(5). The most frequent causes of UTI in Babylon city children was *Proteus* spp. 7.28 %, *E. coli* 30.71%, *Klebsiella* spp. 11.44% and *Enterobacter* spp. 6.62%(7).

Results

From 392 isolate of UTI inpatients about 10.67% of samples gave a mixed cultures, *E. coli* was the major pathogen of UTI about 70.4% of total cases study showed a high increment rate of UTI in the females that males fig(2) 68.2% females &

31.8% males. The second important pathogen was *Proteus* spp. about 15.8% in total, 53.2% males & 46.7% females, fig(3,4) while the other causes of UTI were *Candida albicans* 6.12%, *Staph. aureus* 4.33%, *Pseudomonas aeruginosa* 1.53%, *Staphylococcus faecalis* 0.76%, *Klebsiella* spp.0.5% & *Enterococcus* spp. 0.5% fig(1).

Materials & Methods

Microbial samples were isolated from 392 inpatient which were positive bacterurea of Delivery and Children hospital of Al- Diwanyia. Rutein diagnostic test were used as a tool for microbial identification, starting by patient history, gross(Macroscopical) appearance, to more presumptive tests which included haemolysis on blood agar, Oxidase, Catalase, Coagulase, Indol, Monitol, Methyl red, Urase, H₂S production & Vogas proskauer tests(5). Also carbohydrates fermentation include five types of sugar; Glucose, Sucrose, Lactose, Maltose and Fructose(6).

Discussion

Results showed that there is a high tendency of UTI in females 68.11% than males 31.88% (fig. 2). These results are similar to which said that the incidence of UTI in females are high 61.82% than males 38.17%(7). Most urinary tract pathogens originate in the fecal flora but only the aerobic and the facultative species such as *E. coli* possess the attributes required to colonize and infect the urinary tract(2). *E. coli* was the main cause of UTI in this study about 70.4%(fig. 3,4), the ability to cause infection of the urinary tract is limited to certain serotypes of *E. coli* (e.g. 01.02, 06.07 and 075), the success of these strains may be attributable in part to their ability to colonize the peri-urethral areas (3,2) *E. coli* have been shown to have particular type of Fimbriae (pili) which enable them to adhere to urethral and bladder epithelium(4). Other features *E. coli* appear to assist in localization of organisms in the kidney and in renal damage, the capsular acid polysaccharide (K) antigens are associated with the ability to cause pyelonephritis and are known to enable *E. coli* strains to resist host defenses by inhibiting phagocytosis(2,1,3) Haemolysin production by these strain may also be linked with the capacity to cause kidney damage, many haemolysins act more generally as membrane damaging toxins(3,6). The production of urease, by organism such as *Proteus* spp. which was 15.8% of total recorded cases, has been correlated with

their ability to cause pyelonephritis and often associated with kidney stones(Calculi)(6). One of the most cause of UTI in hospitalized patients is *Pseudomonas aeruginosa* due to its ability to resist different types of antibiotics and other chemicals which used in sterilization processes in hospitals(4,5).

Among the Gram positive species *Staphylococcus* spp. seems to have particular propensity for causing infection in young and active sexually women(1,6).

Enterococcus species are more often associated with UTI in hospitalized patients (1,3,5). Non- bacterial causes of UTI include fungi *Candida* spp. mainly infect immunosuppressed patients and young children(9). UTI can also associate with catheter in hospitals that's may explain the significant increment of nosocomial infection(4,10).

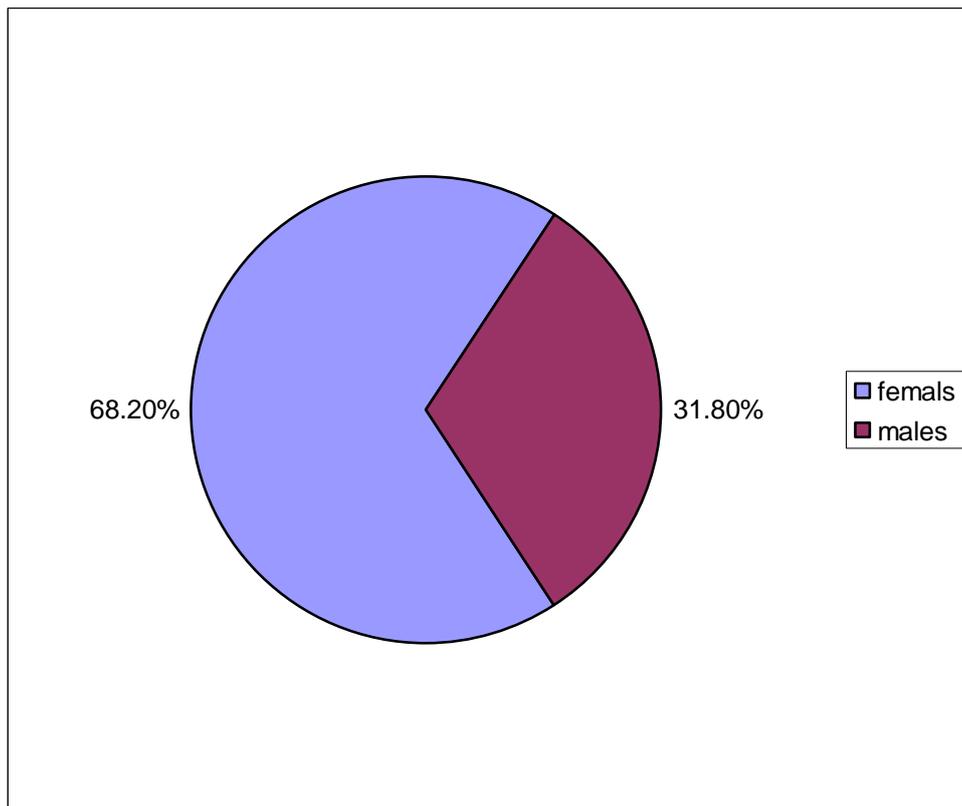
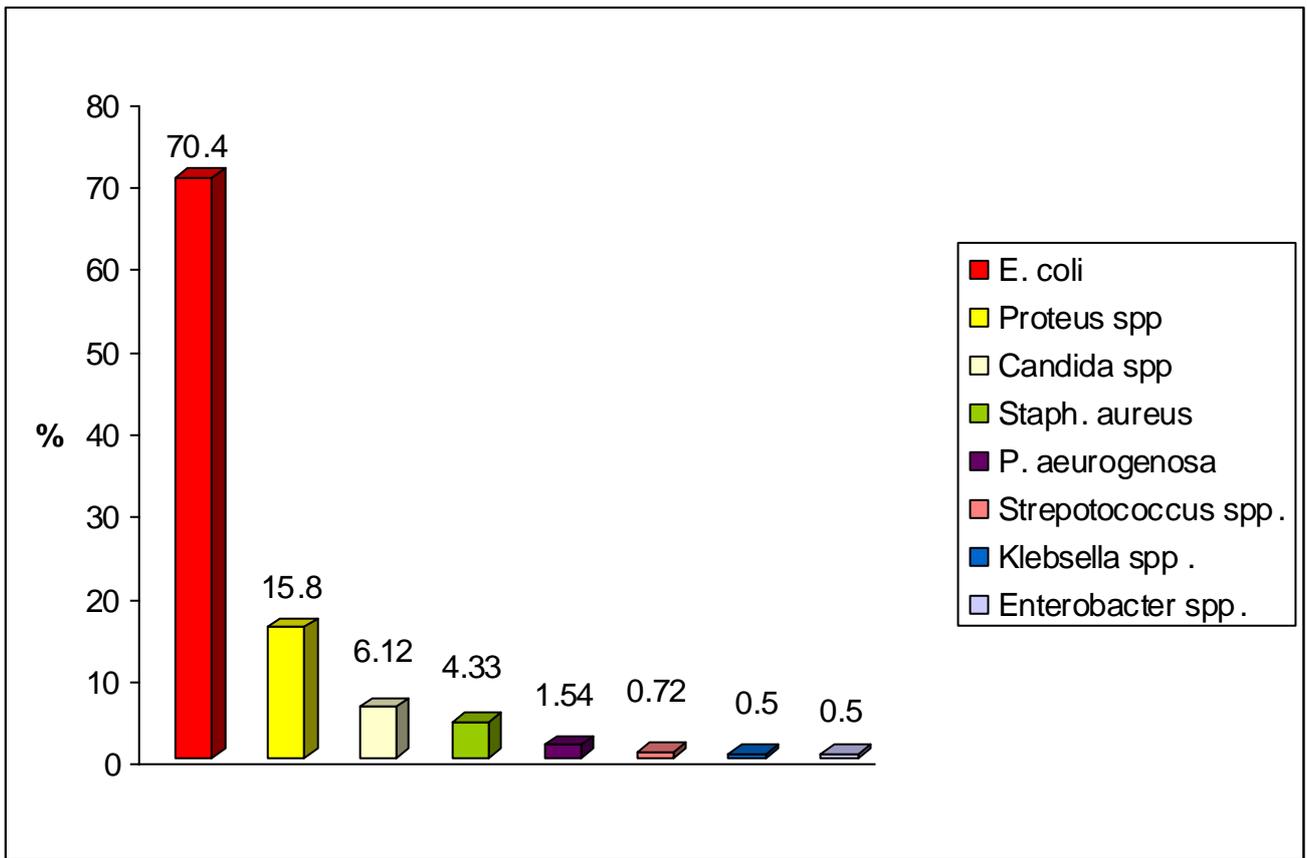


Fig-2: UTI in males and females in Al-Diwanyia



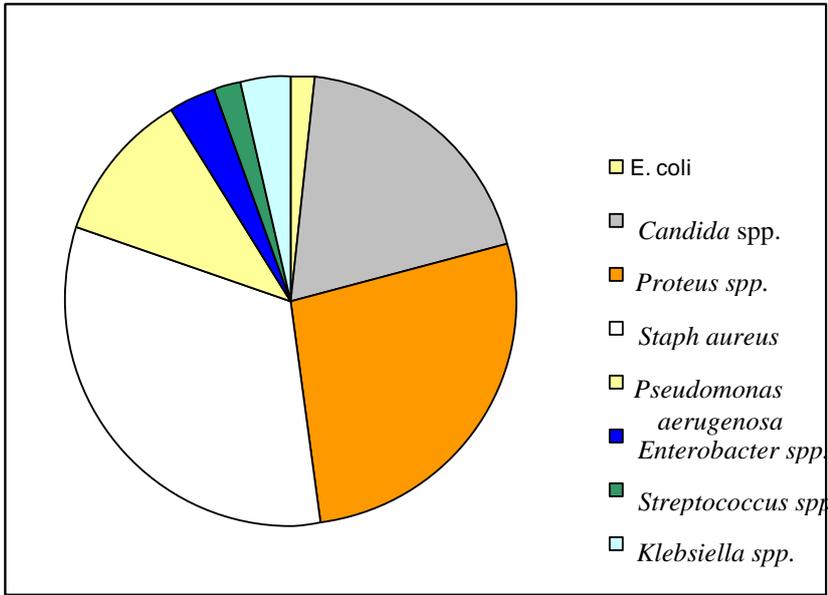


Fig- 3: UTI causes in females in Al-diwanhya

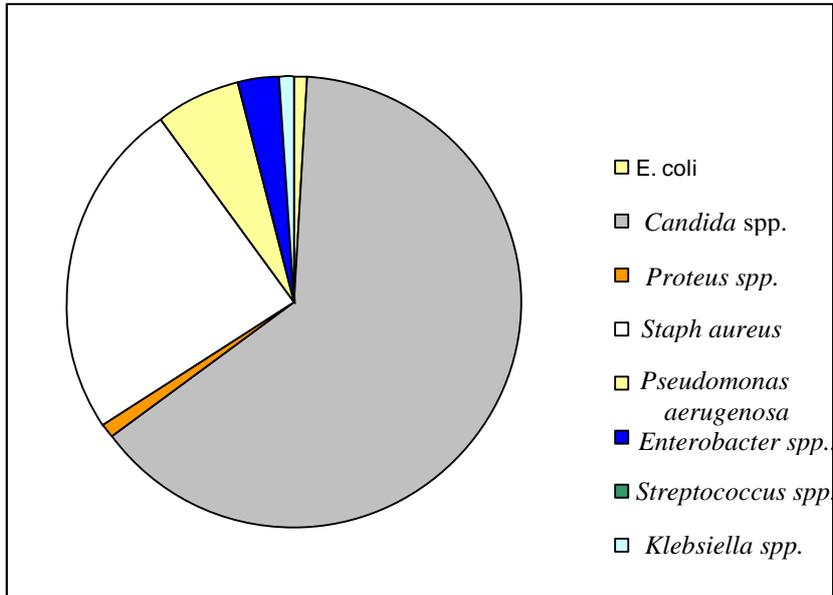


Fig- 4: UTI causes in males in Al-diwanhya

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دراسة المسببات الميكروبية الهوائية للالتهابات المجاري البولية في مدينة الديوانية

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الخلاصة

المجاري البولية هي واحد من أهم المواقع الأكثر شيوعا والمتعرضة للإصابات الميكروبية، أنواع مختلفة من الميكروبات قد تكون العنصر المسبب للإصابة، حوالي 392 عينة من عينات الإدراج لمرضى مستشفى الديوانية للولادة والأطفال. هذه العينات أظهرت زيادة نسبة الإناث قياسا بالذكور حيث بلغت نسبة الإصابة بالإناث 68.11% بينما الذكور 31.88%. كان أكثر المسببات شيوعا هي *E. coli* تقريبا (70.4%) بينما كانت *Proteus* spp. حوالي (15.8%)، *Candida* spp. (6.12%)، *Staph aureus* (4.33%)، *Pseudomonas aeruginosa* (1.53%)، *Streptococcus* spp. (0.67%)، *Klebsiella* spp. (0.5%)، *Enterobacter* spp. (0.5%) وكانت هذه النتائج مقارنة نوعا ما لنتائج دراسات محلية سابقة.