IF : 4.547 | IC Value 80.26 VOLUME-6, ISSUE-7, JULY-2017 • ISSN No 2277 - 8160

Original Research Paper Microbiology

BACTERIOLOGICAL PROFILE AND ITS ANTIBIOGRAM PATTERN OF THE ISOLATES OF PATIENTS HAVING URINARY TRACT INFECTION

Dr. Dolly Solanki MD Microbiology

Dr. Madhulika Mistry Associate Professor, in charge virology and molecular lab. PDU Medical College

ABSTRACT Hepatitis infections are important cause of morbidity and mortality among dialysis patients who have higher risk than general populations due to high number of blood transfusions, prolonged vascular access and the potential for exposure to infected patients and contaminated equipments. The present study of 121 patients was aimed to estimate the prevalence of HBV and HCV infections among those patients.At the start of study 20(16.52%) patients were infected with HBV, 27(22.31%) patients with HCV and 6(4.95%) patients with both. At the end of study 6 (4.95%) new patients were found infected with HCV and 2 (1.65%) new patients with HBV, Hence seroconversion from negative to positive is high for both HBV and HCV infections, but rate of HCV is higher compare to HBV. Stringent Universal Precautions in dialysis unit, proper isolations and separate dialysis machine for infected patients will contribute to reduce cross contamination and nosocomial infections. Immunization with HBV vaccine and regular screening will reduce the prevalence of HBV infections.

KEYWORDS :

Introduction:

Urinary tract infection (UTI) is a term applied to a variety of clinical conditions ranging from asymptomatic presence of bacteria in the urine to severe kidney disease with sepsis. UTIs are one of the most common bacterial infections in humans both in the community and hospital settings. In almost all cases of UTI, empirical antimicrobial treatment initiates before the laboratory results of urine culture are available; thus antibiotic resistance may increase in uropathogens due to frequent misuse of antibiotics. For this reason, knowledge of the etiological agents of UTIs and their antimicrobial resistance patterns in specific geographical locations may aid clinicians in choosing the appropriate antimicrobial empirical treatment. Bacteriological investigations of UTI are incomplete without an antibiotic sensitivity test of the isolate. Microorganisms causing UTI vary in their susceptibility to antimicrobials from place to place and time to time.[6]

Aims and Objectives:

1. To know the organisms causing urinary tract infections.
2. To perform antibiotic susceptibility test of the isolates and prepare local antibiotic policy.
3. To promote rational use of medicines to avoid antibiotic drug resistance.

Materials and Methods:

It was prospective study, which was conducted on 72 mid streams & clean catches urine specimens collected in between August 2014 to October 2014 from clinically suspected UTI patients from various wards of PDU government hospital, Rajkot.

Isolation and Identification of Organisms:

Mid stream urine (MSU) specimens collected from clinically suspected UTI patients from various wardsfor routine culture and sensitivity test, for three months period were included in this study. All samples wereinoculated on blood agar as well as Mac Conckey agar and incubated at 37◦C for 24 hours. A specimen was considered positive for UTI in view of the number of yielded colonies ($\geq 10^5$cfu/mL) and the cytology of the urine through microscopic detection of bacteriuria and PMNs (≥8 leukocytes/mm3).

These MSU specimens were studied for significant bactereuria by grams staining. They were further processed for species identification by standard biochemical tests.

Susceptibility Testing

In-vitro antibiotic sensitivity test was performed by Kirby Bauer's disc diffusion method using Muller Hinton Agaras per Clinical Laboratory Standards Institute (CLSI) guidelines and susceptibility pattern was noted.

Antimicrobialagents tested were Carbapenems, Nitrofurantion, Norfloxacin, Piperacillin-tazobactum, Amikacin,Gentamycin, Piperacillin, ceftazidime - clavulanic acid, Ceftazidime,co-trimaxole,levofloxacin,cefepimevancomycin, linezoid, teiocoplanin..

The CLSI-ESBL phenotypic confirmatory test with ceftazidime, ceftazidime - clavulanic acidwas performed for all the isolates by disk diffusion method on the Mueller-Hinton agarplates.

Susceptibility test results were interpreted according to the criteria established by the Clinical & Laboratory Standard Institute (CLSI). A minimum of 5mm increase in the zone ofdiameter of third-generation cephalosporins, tested in combination with clavulanic acid versus its zone when tested alone, was considered indicative of ESBL production.

Result:

E. coli was the predominant isolate (65.27%) followed by Klebsiella spp. (19.44%), Pseudomonas aeruginosa (6.94%), Proteus spp. (5.55 %) and Staphylococcus aureus(1.3%) and enterococcus(1.3%).

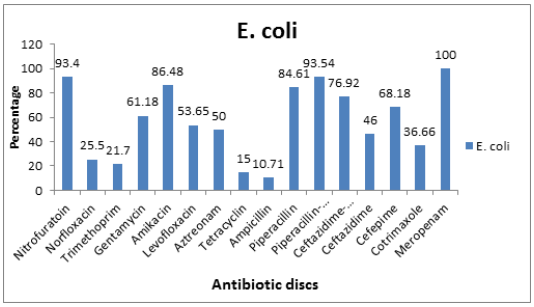
All the gram negative bacilli isolated showed sensitivity pattern in an order of Carbapenems, Nitrofurantion, Piperacillin-tazobactum, amikacin, Piperacillin, ceftazidime - clavulanic acid.

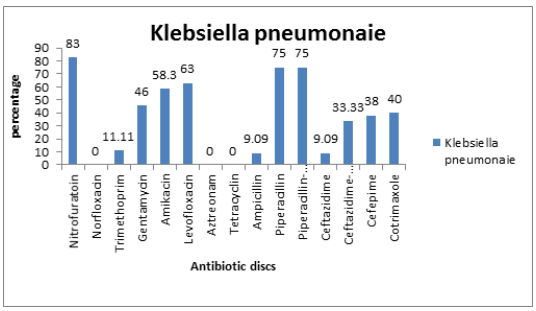
All the gram positive cocci isolated showed sensitivity pattern in order of Nitrofurantion,vancomycinlinezoid , teiocoplanin .

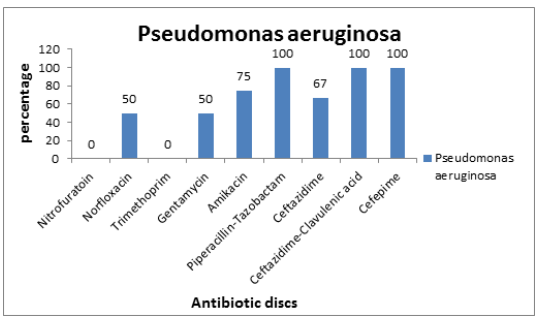
Number of Isolates in case of urinary tract infection:

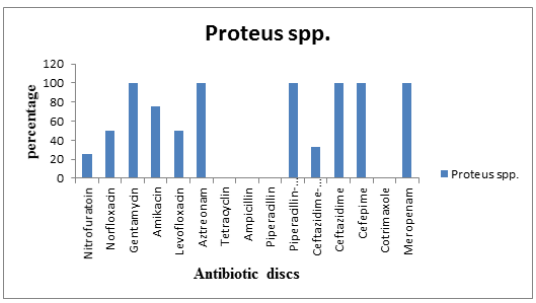
Type of bacteria	No. of isolates	No. of isolates (%)
E.coli	47	65.27%
Klebsiella spp.	14	19.44%
Pseudomonas aeruginosa	5	6.94%
Proteus spp.	4	5.55%
Staphylococcus aureus	1	1.3%
Enterococcus	1	1.3%

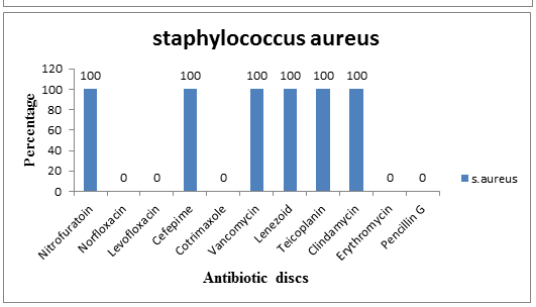
Antibiotic sensitivity pattern of isolated pathogens

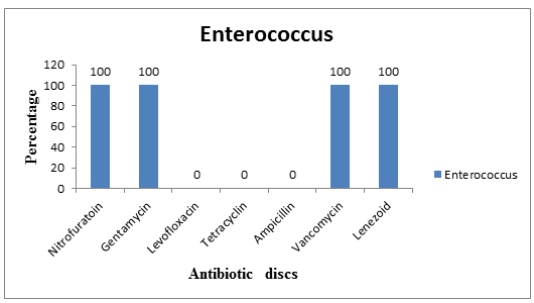












Discussion:

The importance of regional specification of UTI etiology and their antibiotic susceptibility has been convincingly proved by several studies [1-3].However, the knowledge needs to be regularly revised with changing trends in microbiological patterns of the responsible organisms [4].

Urinary tract infection (UTI) is the second most common infectious presentation in community medical practice. Worldwide, about 150 million people [1] are diagnosed with UTI each year, costing in excess of 6 billion dollars [7].

Infection of the urinary tract is one of the most common infectious diseases and it would affect all age groupspeoples including men, women and children in worldwide. The increasing prevalence of infections caused byantibiotic-resistant bacteria makes the empirical treatment of UTIs difficult and outcome unpredictable. In poor resource settings where the availability of alternative effective antibiotics is limited, serious problems are anticipatedin the treatment of multidrug resistant strains [5].

In our study, among the various isolates, E. coli was the predominant isolate (65.27%) followed by Klebsiella spp. (19.44%), Pseudomonas aeruginosa (6.94%), Proteus spp. (5.55 %) and Staphylococcus aureus(1.3%) and enterococcus(1.3%).

All the gram negative bacilli isolated showed sensitivity pattern in an order of Carbapenems, Nitrofurantion, Piperacillin-tazobactum, amikacin, Piperacillin, ceftazidime - clavulanic acid.

All the gram positive cocci isolated showed sensitivity pattern in order of Nitrofurantion,vancomycinlinezoid , teiocoplanin.

Of 72 isolates 16 were found extended spectrum beta-lactamase (ESBL) resistant.

Conclusion:

We conclude that maintaining a record of culture results and the antibiogram may help to make a local antibiotic policy in hospital which helps the clinicians to determine the empirical and / or specific treatment for better therapeutic outcome and to reduce burden of hospital resistant strains.

References:

1. M. Akram, M. Shahid, and A. U. Khan, "Etiology and antibiotic resistance patterns of community-acquired urinary tract infections in J N M C Hospital Aligarh, India," Annals of Clinical Microbiology and Antimicrobials, vol. 6, article 4, 2007. ·
2. C. M. Muvunyi, F. Masaisa, C. Bayingana et al., "Decreased susceptibility to commonly used antimicrobial agents in bacterial pathogens isolated from urinary tract infections in Rwanda: need for new antimicrobial guidelines," American Journal of Tropical Medicine and Hygiene, vol. 84, no. 6, pp. 923–928, 2011.
3. L. Raka, G. Mulliqi-Osmani, L. Berisha et al., "Etiology and susceptibility of urinary tract isolates in Kosova," International Journal of Antimicrobial Agents, vol. 23, supplement 1, pp. S2–S5, 2004.
4. F. Randrianirina, J.-L. Soares, J.-F. Carod et al., "Antimicrobial resistance among uropathogens that cause community-acquired urinary tract infections in Antananarivo, Madagascar," Journal of Antimicrobial Chemotherapy, vol. 59, no. 2, pp. 309–312, 2007.
5. Jadhav S, Hussain A, Devi S, Kumar A, Parveen S, Gandham N, Wieler LH, Ewers C, Ahmed N (2011) Virulence Characteristics and Genetic Affinities of Multiple Drug Resistant Uropathogenic Escherichia coli from a Semi Urban Locality in India. PLoS ONE 6: 1-7.
6. Kotharri A and Sagar V (2008) Antibiotic resistance in pathogens causing community acquired urinary tract infections in India: a multicenter study. J Infect Dev Ctries 2: 354-358.
7. Gonzalez CM, Schaeffer AJ (1999) Treatment of urinary tract infection: what`s old, what`s new, and what works. World J Urol 6:372-382.