ABSTRACT

Objectives: *Pseudomonas* species cause urinary tract infection (UTI). This study was conducted to isolate *Pseudomonas* species causing significant bacteriuria and to analyze its antibiogram at a tertiary care hospital.

Methods: About 107 urine samples received in the laboratory from August 2015 to July 2016 having significant bacteriuria with *Pseudomonas* species were tested for antimicrobial activity. Samples were from both inpatients and patients attending as outpatients to a tertiary care hospital with different age groups and gender. Midstream urine samples were inoculated using a standard calibrated loop into blood agar and MacConkey agar following semi quantitative technique using Kass concept. MALDI (Biomerio, Effoile, France) was used for speciation, and Vitex automated system (Biomerio, Effoile, France) was used for antibacterial sensitivity testing.

Results: About 107 urine samples contained *Pseudomonas* species by MALDI obtained from 69 male (64.48%) and 38 (35.51%) female patients. Inpatients were 90 (84.11%) and 17 (15.88%) outpatient department (OPD) patients. Isolation of *Pseudomonas aeruginosa* was from 90 samples (84.11%) and *Pseudomonas putida* in 17 (15.88%). Significant bacteriuria was more in the age group of >60 years in both genders. Susceptibility to gentamicin was 52 (48.59%), ceftazidime 56 (52.33%), and imipenem was 58 (54.20%). Organism was multidrug resistant in 49 (45.79%) samples.

Conclusion: *P. aeruginosa* remains the most common uro pathogen among *Pseudomonas* species. Drug of choice for inpatients suffering from UTI by *Pseudomonas* species can be gentamicin and for patients attending OPD can be ceftazidime. Imipenem can be the reserve drug. Periodic antibiotic review is required for proper treatment of UTI.

Keywords: *Pseudomonas* species, Urinary tract infection, Semi quantitative method.

INTRODUCTION

Urinary tract infection (UTI) is one of the leading causes of infection worldwide. Although *Escherichia coli* is predominantly associated with the etiology of UTI [1], another organism like *Pseudomonas aeruginosa* is on the rise [2]. *P. aeruginosa* has proven to be one of the multidrug resistant organisms thus making its treatment ineffective [3]. It is a Gram-negative rod that can survive in myriad of environments such as aquatic and terrestrial [4]. This study was conducted to identify *Pseudomonas* species causing significant bacteriuria and to analyze its antibiogram in the study population.

METHODS

Institutional research committee approval was taken for the study. 107 urine samples received in the Microbiology Laboratory from August 2015 to July 2016 having significant bacteriuria with *Pseudomonas* species were tested for antimicrobial activity. Samples were received from both inpatients and patients attending as outpatients to a tertiary care hospital. Age and gender of the patients were noted. Midstream urine samples were inoculated using a standard calibrated loop into blood agar, MacConkey agar following semi quantitative technique using Kass concept. Streaking of the specimens was performed using four quadrant streaking method without intermittent heating on blood agar. 

RESULTS

About 107 urine samples were identified to contain *Pseudomonas* species by MALDI obtained from 69 (64.48%) male patients and 38 (35.51%) female patients. Inpatients were 90 (84.11%) and 17 (15.88%) attended to outpatient departments (OPD). Among inpatients, 64 (71%) were males and 26 (29%) were females and in patients attending as outpatients, 10 (59%) were females and 7 (41%) were males. *P. aeruginosa* was isolated from 90 samples (84.11%), and others were *Pseudomonas putida* 17 (15.88%). Significant bacteriuria was more in the age group of >60 years in both genders (Fig. 1).

Susceptibility to gentamicin was 52 (48.59%), ceftazidime 56 (52.33%), ceftepime 58 (54.20%), and imipenem was 58 (54.20%). Organism was multidrug resistant in 49 (45.79%) samples (Fig. 2).

DISCUSSION

Majority of the UTI due to *Pseudomonas* species was found in males when compared to females. In both the genders, UTI was more in the age group of more than 60 years. This finding varied from the studies conducted by Shah et al. [3], where females were more infected with UTI than male patients. A study conducted by Akram et al. [5] had many female patients suffering from UTI, but in the age group of 50-80 years, 100% males were suffering from UTI caused by *Pseudomonas* species. Schaeffer et al. [6], in their study, showed many male patients suffering from UTI than female patients, which was in concordance with our study. A study conducted by Saperston et al. [7] had more male patients presenting as inpatients with symptoms of UTI due to *Pseudomonas* species than outpatient presenting as UTI due to *Pseudomonas* species. Female patients presenting as UTI due to *Pseudomonas* species was
Arbekacin treatment of a patient infected with a multidrug-resistant strain of Pseudomonas aeruginosa was 95.45% against susceptibility. Our previous study had imipenem susceptibility of 54.20%, whereas study conducted by Biswas et al. [12] showed 100% susceptibility. In our previous study, susceptibility to gentamicin was only 37.11% [10], but the present study showed 100% susceptibility. A comparison of inpatient versus outpatient resistance patterns of pediatric urinary tract infection. J Urol 2014;191: S Suppl:1608-13.

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