PATTERN OF ANTIBIOTIC RESISTANCE OF E. COLI AND KLEBSIELLA AMONG DIFFERENT AGE GROUP PATIENT IN URINARY TRACT INFECTION

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ABSTRACT:

The study was conducted in Government hospital of northern region of patient having urinary tract infection; the total samples were 32, evidenced for the presence of pathogenic bacteria. Out of these 32 positive samples there 17 (89.47%) samples having Escherichia Coli and 2 (10.52%) were Klebsiella strain and the gender ratio was (6315%) male and 36.84% female. The pattern of antibiotic quite high even same antibiotics were 100% resistant later it was found that ESBL producing bacteria showing more resistant and this bacteria is more common in causing urinary tract infection among all age group of patient [1]. Inappropriate and widespread use of antibiotics has led to the emergence of drug resistance mechanisms like the production of extended spectrum beta-lactamses (ESBL), AmpC beta-lactamses, Metallo-beta-lactamses and Carbapenemases. The basic problem is now that new drugs also becoming resistance in Enterobacteriaceae family.[2]

Keywords: - ESBL, Urinary infection, broad spectrum antibiotic, resistance

Introduction

Millions of the people are catching the infection of urinary tract and getting ill from mild to severe. The most common infection due E.coli,[3] Klebsiella, Pseudomonas and Proteus but *E.coli* is most prominent.[4] So to find out the UTIs case in a particular hospital it was planned to collect the patient's samples. Urinary infection if not diagnosed at early stage and no medicine given may it may lead to urinary tract syndrome, pyelonephritis.[5] Some patients may also catch the infection in hospital if urinary catheter used[6]. The patients who are on urinary infection therapy physician prescribe the medicine for 5-7 days but patients do not take the medicine as prescribed by the physicians.[7] The treatment left in-between, incomplete treatment bring the changes bacterial behavior like pathogenicity and resistance, result in multi-drug resistance [8]

MATERIAL AND METHOD

This study was done during four months in bacteriology section of Govt. hospital in northern region during four month and a total of 32 Gram negative bacteria isolated from clinical samples such as urine was included in the study.[9]

The sample was collected in wide mouth clean bottle then sample was inoculated on suitable media and through wet mount also done to detect the presence of pus cells, an evidence for the presence of bacteria [10].after collection the samples were inoculated on recommended media and incubated at 37^0C for 24hrs. After 24 hour the bacteria identification done by conventional method. After that antibiogram study was also performed as described by Kirby- Bauer, method of antibiotics.[11]

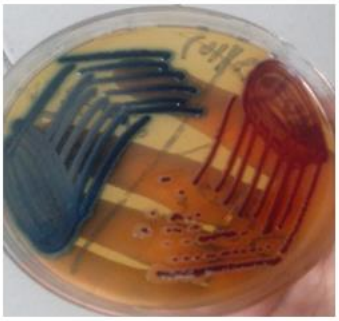


Fig.1 Growth of *E. coli* and *K. pneumonia*

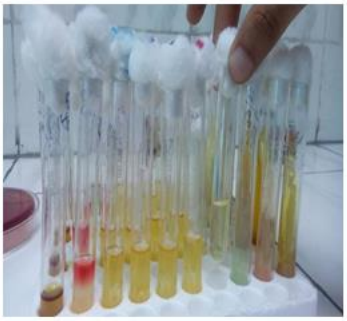


Fig. 2: Showing Positive Result for *E.coli*

Fig. 6: showing AST plate and zone of inhibition

Procedure:

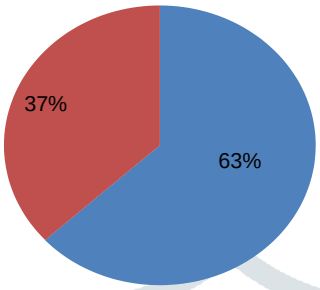
1. Suspensions of pure culture were swabbed on Muller Hinton agar and the antibiotic discs were then applied on the inoculated plate ensuring sufficient space between individual discs for proper measurement of inhibition zone.[12]
2. After that, inoculated plates were incubated at 37^0C for 24hrs.
3. After incubation, zone of incubation were observed.

RESULTS

A total of 32 GNB (gram negative bacilli) were isolated from different clinical samples and were identified and characterized there were total 19 samples were ESBL producing bacteria out of that 12 were male and seven were 7 only.

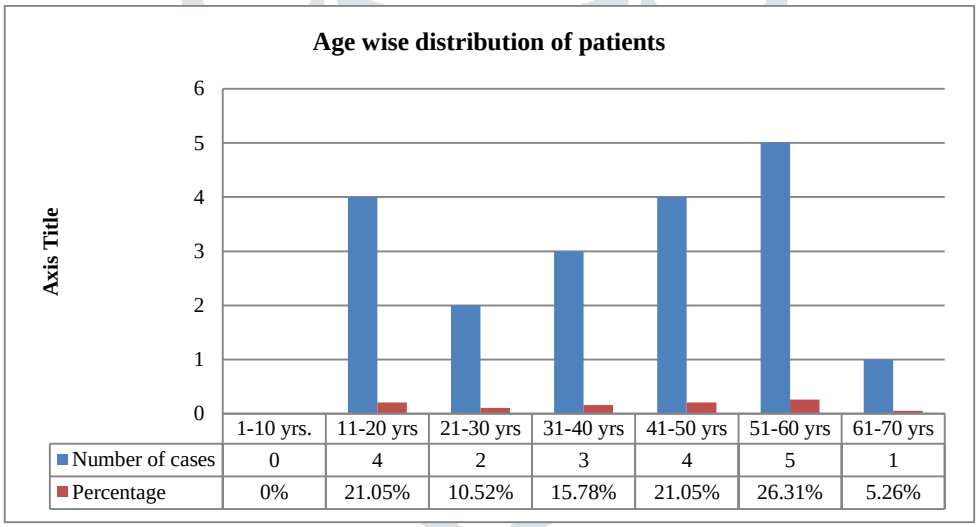
Table 1: Gender wise distribution of the total number of representative sample 19, 12were males and 7 were females.

Gender	Number of cases	Percentage%
Male	12	63.15%
Female	7	36.84%

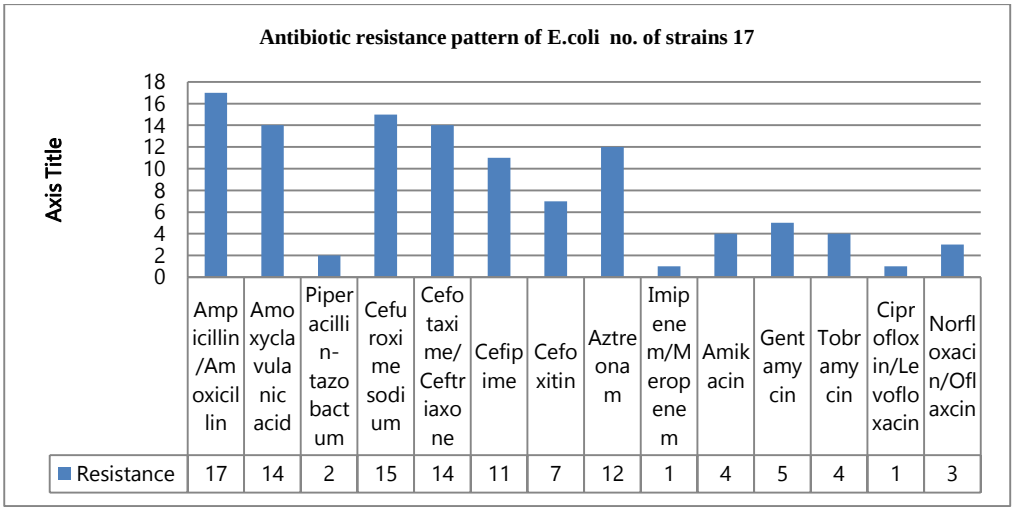


Graph: Gender wise distribution

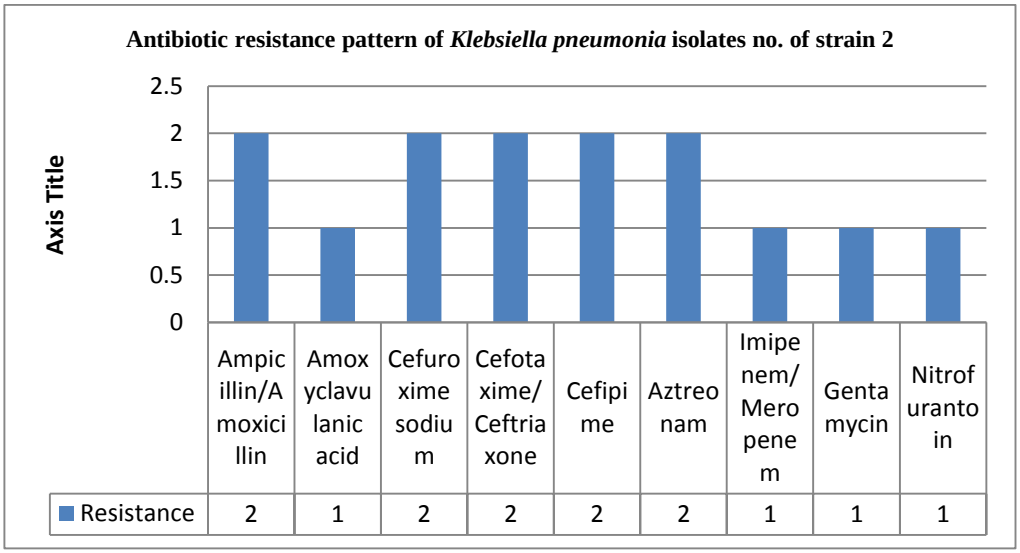
The Gram Negative Bacteria (ESBL) isolated from clinical samples is presented in the table *Escherichia coli* was the commonest isolate accounting for 17(89.47%), followed by *Klebsiella pneumonia* 2 (10.52%). Majority of the ESBL were isolated from urine culture.[13]



Graph 1 regarding age wise distribution



Graph 2 regarding resistance in *E.coli*



Graph 3 regarding resistance in *Klebsiella*

CONCLUSION

Urinary tract infection is one of the leading causes of morbidity among patients accounting for most of the out- patient visits and hospitalization[14]. They are caused either by the ascending route from the urethra or via the descending route through the blood stream. The ascending route of infection accounts for more than 90% of the cases.[15] The host factors contributing to the infection include female, sex, sexual activity, use of spermicides and age.[16]

Extended spectrum beta- lactamases (ESBLs**)** are defined as enzymes produced by certain bacteria that are able to hydrolyze extended spectrum cephalosporin[17]. They are therefore effective against beta- lactam antibiotics like Ceftazidime, Ceftriaxone, Cefotaxime and Oxyimino-monobactum.[18] Bacteria have developed their resistance mechanisms along with the discovery of the first antibiotic, Penicillin. Antibiotic resistance may also be either mutational or acquired.[3] This implies changes in the bacteria that prevent the antibiotic from exerting its effect on the bacterial target,

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