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Antibiotic resistant urinary tract infections in an urology ward

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Abstract: Introduction: UTI (urinary tract infections) represent a central pathology for a urological service. Antibiotic resistance is growing at a steady and alarming rate worldwide and especially in Romania.
Method and materials: We have analyzed all the patients that were admitted to our clinic for continuous hospitalization between January 2015 and October 2015. All patients undergone urine culture and all cultures positive had an antibiogram worked up. We have selected all patients that had antibiotic resistance to at least an antibiotic.
Results: From 1745 patients admitted for continuous hospitalization, we had 180 positive urine cultures at admission from which 125 had at least an antibiotic resistance.
Conclusions: Antibiotic resistance is a serious phenomenon, with potential lethal complications, which we encounter daily in urological practice

INTRODUCTION

Uncomplicated UTI are probably the most common urological condition. It is estimated that at least 1 out of 3 females will develop an UTI during their lifetime. UTI frequency at young females is associated with sexual intercourse. When urological malformations, pregnancy, menopause, urolithiasis occur conditions for recurrence of the disease are met. Recurrences are defined as at least 2 episodes of UTI in 6 months or 3 episodes a year.

Male patients develop UTI due to different mechanisms and at an elderly age. The most common mechanism that facilitates the development of UTI in men is bladder outlet obstruction caused mainly by prostatic enlargement.

UTI are caused mainly by Gram negative *enterobacteriacea*. Escherichia Coli is the cause for about 80-90 % of community acquired UTI's. In healthcare related infections E. Coli is still the leading cause but with a more modest percentage. Other pathogens that cause UTI are: Proteus mirabilis, Enterococous, Klebsiella pneumonie, Pseudomonas aeruginosa.

METHOD AND MATERIALS

Between January and October 2015, 1745 patients were admitted for continuous hospitalization in our Clinic. At admission all of these patients had their urine sent for culture.

The urine culture was tested for antibiotic response for the following antibiotics:

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Trimethoprime-sulfamethoxazole, cefuroxime, cefotaxime, ceftriaxone, ciprofloxacine, ofloxacine, levofloxacine, gentamicine, ampiciline, oral penicillin, nitrofurantoine, imipenemcilastatin, ertapenem, meropenem and tigeciclin.

We had 180 positive urine cultures from which 125 were antibiotic resistant at at least one tested antibiotic.

We have analyzed the relationship between the germ and antibiotic resistance and also the sex and age of patients.

RESULTS

We had 180 positive urine cultures representing 10.31% out of all patients. 7.16% of all patients had at least one antibiotic resistance. 70% of the patients with positive urine cultures had at least one resistance.

Out of the 180 patients 104 were females (57,7%) and 76 were males (42,3%). Resistance was encountered in 56 females (44,8%) and 69 male patients (55,2%)

Out of all UTI's we had 143 E. Coli cases (79%), 25 Klebsiella pneumoniae (13,88%), 12 Proteus mirabilis (6,66%), 8 Enterococus (4,44%) faecalis and 2 cases with Pseudomonas aeruginosa (1,11%).

In the antibiotic resistant group we encountered the following bacterial involvement: 88 patients had E. coli, 19 had Klebsiella pneumoniae, 10 had Proteus mirabilis, 6 had Enterococus faecalis and 2 had Pseudomonas aeruginosa.

The decreasing percentage of antibiotic resistance was the following: Psedomonas aeruginosa cases had 100% resistance at at least one antibiotic, 83% of Proteus mirabilis cases had resistance, 76% of Klebsiella cases had resistance, 75% of Enterococus faecalis had resistance while the least resistant germ was E. Coli with 61,53%.

There were no significant differences between sexes except the fact that all the 2 cases with Pseudomonas aeruginosa were registered at male patients with long time users of indwelling ureteral catheters.

Regarding antibiotic resistance we had only 2 cases(1 case with Pseudomonas and 1 case with Klebsiella) which had no sensibility to any of the tested antibiotics. The strongest resistance was registered to ampicllin meaning that 115 (92%) cases with resistance had no sensibility to the drug. Resistance to penicillin was counted at 97 (77%). Third highest resistance was encountered to Thimetoprim with 90 patients (72%). The lowest resistance was registered for imipenem cilastatin, ertapenem, meropenem and tigeciclin. With only 2 cases (1,6%). Levofloxacin had also low resistance with 25 cases meaning 20%.

CONCLUSIONS

Antibiotic resistance is real threat to the general health of humanity, being more and more encountered especially in hospital related infections but also in community acquired infections. UTIs make no exceptions. Romania is especially at high risk with reported resistance to quinolones exceeding 30%.

The data we obtained from patients admitted for continuous hospitalization in our Clinic is similar to data in international literature reports concerning antibiotic resistance. It is important to realize the fact that urological patients are at high risk of developing antibiotic resistant infections due to the age profile, the pathology and the increasing number of indwelling catheters.

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