

SURVEY OF ANTIBIOTIC UTILIZATION AT NISHTAR HOSPITAL MULTAN

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ABSTRACT

The usage of multiple antibiotic agents is unnecessarily high and this practice may lead to the emergence of resistant microorganisms. It is necessary to improve public awareness about the rational use of antibiotics in order to bring a change in consumer's behaviour. Antimicrobial resistance has become a serious global problem. Future of antibiotic resistance is getting dark day by day. The study was done to determine prescribing patterns of antibiotics among hospitalized patients, and to evaluate the antibiotic consumption. In this cross-sectional study we studied the drug charts of patient admitted in our hospital, through random sampling technique. We analyzed 400 patients chart, out of these 340 patients received antibiotics during their hospital stay. Route of administration was intravenous 88%, oral 2% and both 10%. Patient receiving single antibiotics were 40%, while 60% received multiple antibiotics. Average number of antibiotics prescribed per patient was 1.8. Most commonly prescribed drugs were Ceftriaxone (60%), Metronidazole (46%), Quinolones (30%) and Co-amoxiclav (25%). **Conclusion:** Multiple medications may provoke potential risk factor in terms of patient's health. This also potentiates Drug-drug interaction. Moreover, unreasonable use of antibiotics may lead to emergence of antibiotic resistance. There is a large number of admitted patient receive multiple antibiotic therapy Nishtar Medical College Multan. There must be proper guidelines for antibiotic use from the administration.

KEYWORDS: Anti-Bacterial Agents. Anti-Infective Agents. Hospitals. Drug Resistance, Microbial. Drug Utilization. Bacterial Infections. Cross Infection. Infection Control.

INTRODUCTION

Antimicrobials function by attacking bacteria on various levels in the human body. They play an important role in treating as well as preventing bacterial infections. The effectiveness of antibiotics in treating bacterial infections cannot be denied. Antibiotics are one of the most frequently used drugs in outpatient and inpatient but overuse of antimicrobial drugs, paucity of new drugs and the prevailing poor hygiene and infection control mechanism are leading to the development of antibiotic resistance.^[1] Antimicrobial resistance has become a serious global problem.^[2] Evaluation of the quality of health care is an essential component of health system research.^[3] The past two decades resistance to antibiotics has become a major public health problem, due to rapid spread of multi drug resistant bacteria and decreasing availability of new antibacterial drugs.^[4] Resistant bacteria has significantly reduces the possibilities of treating infectious diseases effectively. This situation may lead to the pre-antibiotic era, where many people could suffer or die from simple bacterial infections. In developing countries antibiotics are prescribed to almost 45% in hospitals, often unnecessarily or

inappropriately.^[5,6,7] Studies from different hospitals in Pakistan have reported that bacteria isolated from different infections were becoming gradually resistant to traditional antibiotics.^[8] Reducing medication errors and improving Patient safety has become a common topic of discussion. Improving the judicious use of medications and minimizing adverse effect reactions has always been key areas of research and study for those working in clinical Pharmacology. The international healthcare associations demand that the treatment criteria of antibiotics ought to be sensible and may receive support from larger masses. Prescribing the proper antibiotics for infection treatment and prevention, in effective doses with an acceptable length of time of use is important in providing the proper treatment, reducing resistance to the drug, preventing complications, and lowering the cost of treatment.^[9,10,11]

The patient study was carried out to see prescribing pattern and utilization of antibiotics at the Nishtar Hospital Multan. It's hoped that this study can generate baseline information which will adequately assess the

medical practices bearing on safe and acceptable antibiotic prescription.

MATERIALS AND METHODS

It is a cross-sectional study that was done at Nishtar hospital Multan department of pharmacology and therapeutics. Data of 400 patients through random sampling techniques from both surgical and medical wards was collected. Duration of the study was 3 months from August 2017 to October 2017. 250 patients from Medical ward and 150 patient from surgical ward were included in the study comma with equal gender distribution, regardless of clinical presentation and diagnosis. Information about patient's age, gender, route of drug administration and different group of antibiotics was gathered. We calculated average age of patients, route of Administration, average number of antibiotics for patient and frequently used antibiotic in medical and surgical wards. The results are summarized in the table and Computer Based analysis was used for processing the data.

RESULTS

We analyzed 400 patients chart, out of these 340 patients received antibiotics during their hospital stay. Route of administration was intravenous 88%, oral 2% and both 10%. Patient receiving single antibiotics were 40%, while 60% received multiple antibiotics. Average number of antibiotics prescribed per patient was 1.8. Most commonly prescribed drugs were Ceftriaxone (60%), Metronidazole (46%), Quinolones (30%) and Co-amoxiclav (25%).

Table: Utilization of Antibiotics

Antibiotics	Percentage
Ceftriaxone	60%
Metronidazole	46%
Quinolones	30%
Co-amoxiclav	25%
Aminoglycosides	21%
Vancomycin	11%
Clindamycin	3%

DISCUSSION

Use of antibiotic has led to the emergence of bacterial resistance. Inappropriate and unreasonable use of antibiotics in the clinical medicine is widespread, sometimes at inadequate diseases and often, for non-bacterial diseases. This is more evident in the indoor setting where the use of antibiotics is maximal.^[12] Our study confirm that 85% of total indoor patients receive antibiotics regardless of the diagnosis and clinical presentation, which is comparable to the local study conducted at KTH Peshawar we showed a 60% antibiotic consumption.^[13] But, our study results is much higher than other parts of Asia, Europe or USA.^[14] The use of antibiotics percentage was 71.1% in Bangladesh^[9], 45.8% in Bahrain, 16.9% in Jordan

and 56.2 percent in Saudi Arabia.^[12] In the Middle East, Lebanon had a rate of 17.5% in a University Health Center.^[16] In Europe antibiotic prescribing rate of 27%, while Central and South America had rates of 28%.^[10,11] As Pakistan is a developing country with limited resources and health budget and we cannot afford unnecessary and overuse of antibiotics in our indoor Hospital setting. We are wasting the limited resources on those who do not need them while depriving the other deserving patients at the same time. In our study the most commonly used drugs was ceftriaxone 60%. Ceftriaxone administration is much higher in India 82%⁹ another study conducted at Bangladesh showed 32% consumption of ceftriaxone.^[11] It can explain the reason behind ceftriaxone having abnormally high resistance. Metronidazole consumptions was 46% in our study second highest which is Thailand 9.7%. Quinolones utilization was 30% which is much more than utilization of quinolones at KTH Peshawar 10%.^[13] The mean number of antibiotics prescribed per patient in our study was 1.80 which is comparable to the many studies done in developing countries. This figure was 3.3 in Bahrain¹² which is the highest among many other countries. One study of 12 developing countries demonstrated that mean number of drugs prescribed was 1.6.^[14] It was observed in the study, patients with multi-organ failure received maximum antibiotics without getting proper guidance for relevant antibiotic prescription from sub-specialty departments. It was observed that the knowledge of post graduate trainees and even senior consultant in microbiology is outdated. The limitation of our study was inadequate availability of antibiotics in the indoor pharmacy and policy of strict adherence to available antibiotics. The study gives information regarding the trend of antibiotics usage in the admitted patients of Nishtar Hospital based on patient's record. A more detailed understanding of the problem related to hospital use of antibiotics should involve prescription data link to patient status particularly in term of diagnosis and microbiological findings.

CONCLUSION

Multiple medications may provoke potential risk factor in terms of patient's health. This also potentiate Drug-drug interaction. Moreover, unreasonable use of antibiotics may lead to emergence of antibiotic resistance. There is a large number of admitted patient receive multiple antibiotic therapy Nishtar Medical College Multan. There must be proper guidelines for antibiotic use from the administration.

REFERENCES

1. Balabanova Y, Fedora I, Kuznets S, Graham C, Ruddy M, Aton R, et al. Antimicrobial prescribing patterns for respiratory diseases including tuberculosis in Russia: A possible role in drug resistance? *J Antimicrobial Chemotherapy*, 2004; 54(3): 673-9.

2. Borrego F, Glickman Principles of antibiotic prescribing in the elderly. *Drugs Aging*, 1997; (1): 7-18.
3. Kaleen F, Usman J, Hassan A, Khan A. Frequency and susceptibility pattern of metallic-beta-lactamase producers in a hospital in Pakistan. *J Infection Developing Countries*, 2010; 4(12): 810-3.
4. Shah SH. Susceptibility patterns of *Escherichia coli*: Prevalence of multidrug-resistant isolates and extended spectrum beta-Lactamase phenotype. *JPMA*, 2002; 52: 407.
5. Berm L, Bade a, Cots JM, Leor C, fore's Garcia D, Garn-Hansen B, Monck A. Respiratory tract infections in general practice: Considerable differences in prescribing habits between general practitioners in Denmark and Spain. *Ear J Clan Pharmacology*, 2004; 60(1): 23-8.
6. Ali I, Kumar N, Ahmed S, Asti JI. Antibiotic resistance in uropathogenic *E. coli* strains isolated from non-hospitalized patients in Pakistan. *JCDR*, 2014; 8(9): DC01.
7. Corset A. Global Importance of Antibiotics and consequences of antibiotic overuse. *AAAS Annual Meeting*, 2015: 12-6.
8. Tanvir R, Hafez R, Husain S. Prevalence of multiple drug resistant *Escherichia coli* in patients of urinary tract infection registering at a diagnostic laboratory in Lahore Pakistan. *Pak J Zool*, 2012; 44(3): 707-12.
9. Udomthavornsuk B, Tatsanavivat P, Patjanasoonporn B, Khomthong R, Bhuripanyo K, Saengnipanthkul S, et al. Antibiotic use at a university hospital. Antibiotic Working Group of Srinagarind Hospital. *J Med Assoc Thai*, 1990; 73(3): 168-74.
10. Ashworth M, Latino Vic R, Charlton J, Cox K, Rowlands G, Guilford M. Why has antibiotic prescribing for respiratory illness declined in primary care? A longitudinal study using the General Practice Research Database *Public Health (Of)*, 2004; 26(3): 268-74.
11. Bashir S, Hague A, Sarkar Y, Raza A. Prevalence of integrin's and antibiotic resistance among. *Arch Clan Microbial*, 2015; 6(4).
12. So hail M, Khurshid M, Salem HG, Javed H, Khan AA. Characteristics and antibiotic resistance of urinary tract pathogens isolated from Punjab, Pakistan. *Jundishapur J Microbial*, 2015; 8(7).
13. Ferrara AM, Fiesta AM. New developments in antibacterial choice for lower respiratory tract infections in elderly patients. *Drugs Aging*, 2004; 21(3): 167-86.
14. Review. New developments in antibacterial choice for lower respiratory tract infections in elderly patients. *Drugs Aging*, 2004; 21(3): 167-86.
15. YoshikawaTT. Antimicrobial resistance and aging: beginning of the end of the antibiotic era? *J Am Geriatric Sock*, 2002; 50(7 Supple): S226-9.