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Original Research Article

Usage of Empirical Antibiotics in Tertiary Care Hospitals- A Prospective Study

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Abstract: *The aim of this study is to determine the pattern of empirical Antibiotics prescription for the patients who attend the outpatient department with common ailments .221 random prescription duplicates were collected from various tertiary care hospitals in Tamilnadu across all clinical departments between February to March 2017,and analyzed prospectively for the pattern of empirical antibiotic prescription. Empirical Antibiotics were prescribed in about 68 % of prescriptions. Empirical Antibiotics were prescribed for Respiratory tract Infection (Includes URI & LRI) (30%),fever (22%),Diseases of the female genital tract (17.4%) gastroenteritis(10.6%)%),skin and soft tissue infections (8%),Urinary tract infections (8%),Otitis media (4%) . The empiric antibiotic commonly prescribed were amoxicillin (33%), Cephalexin (21%), Ciprofloxacin (19%), Azithromycin (14%), Doxycycline (8%), Trimethoprim-Sulfamethoxazole (5%). The duration of administration varies depending upon the drugs, ranging from 5 days-14 days. Upto 20% of prescriptions advise antibiotics for conditions which does not require empirical antibiotics in disease conditions like viral etiological problems (65%) ,Single episode of Diahorrea (26%), Clinical condition without any localizing signs (9%). Without any proper antibiotic policy, when antibiotics were given to the patients empirically, leads to serious problems like Antibiotic resistance and development of Super-Bugs.*

Keywords: *Antibiotics, Antibiotic policy, Prescription, Resistance, Rational Use*

I. Introduction

Antibiotics are medicines used to prevent and treat bacterial infections. The usage of antibiotics was a very common in general practice. At the same time, misuse of antibiotics was also on the increase. This has been the thought of Dr.Alexander Fleming, who discovered penicillin and he has mentioned in his lectures about the antibiotic misuse.The term "Empirical Antibiotics" literally means, prescribing antibiotics to a disease presuming that the aetiology of that particular disease was due to the microbe which the most common microbe was causing that particular disease. Many times the concept of empirical antibiotic was fruitful in curbing the disease process, thereby helping the patients to achieve a faster cure, without waiting for the culture and sensitivity reports, which usually takes days to get the result.Numerous studies, both from developed and developing countries have described about the use of empirical antibiotics and also enumerated the empiric choice of antimicrobials according to age,sex, gender and also depending upon the local geographic conditions. Periodic evaluations of antibiotics prescription patterns enables suitable modifications in the treatment regimen to be prescribed and also to increase the therapeutic benefit and minimizing the adverse effects. Such studies seek to monitor, evaluate and if necessary, suggest modifications in the prescribing behavior of medical practitioners to make the medical care rational and cost effective.

Bacteria, not humans or animals, become antibiotic-resistant. These bacteria may infect humans and animals, and the infections they cause are harder to treat than those caused by non-resistant bacteria. Antibiotic resistance leads to higher medical costs, prolonged hospital stays [1], and increased mortality [1] were proved in many studies across the world. Due to the availability of higher antibiotics, even in small village pharmacies, which are usually reserved in western countries, the trend of prescribing higher antibiotics, against the microbes which are originally susceptible to traditional antibiotics was alarmingly rising. Where antibiotics can be bought for human or animal use without a prescription, the emergence and spread of resistance is made worse. Antibiotic resistance is rising to dangerously high levels in all parts of the world [2].New resistance mechanisms are emerging and spreading globally, threatening our ability to treat common infectious diseases. A growing list

of infections – such as Gram negative infections[3],pneumonia[4], , tuberculosis[5], , nosocomial infection[6], and gonorrhoea – are becoming harder, and sometimes impossible, to treat as antibiotics become less effective. Similarly, in countries without standard treatment guidelines, antibiotics are often over-prescribed [7] by health workers and veterinarians and over-used by the public. Hence to culminate the problem of antibacterial resistance, this study aims in observing the usage of empirical antibiotics in various tertiary care centres.

II. Materials and Method

The present study was a prospective study carried out at various tertiary care hospitals in Tamilnadu across all clinical outpatient departments between February to March 2017.After obtaining approval and clearance from the Institutional Ethics Committee, 221 prescription duplicates prescribed for common ailments by the treating physicians, were collected by purposive sampling for analysis. For the purpose of data collection, the method of duplicate prescription was used, in which original prescription was given to the patient and a copy of the original prescription was collected by the investigator. The prescriptions were analysed prospectively for the demographic characteristics of the patients, diagnosis/ provisional diagnosis, Antibiotic formulations, dose, route, duration of administration. As it was a descriptive study, the results were described in the form of percentages, and graphs by using Ms-Excel 2007.

III. Results

221 prescriptions from patients (65 % male and 35% female) attending the outpatient departments of all clinical departments were randomly selected, out of which 68% (n=150) of prescriptions contains antibiotics prescribed for common ailments .The mean age of patients being 46.42 yrs (overall range 1day -85yrs). Empirical antibiotics were prescribed to Respiratory tract Infection (Includes URI & LRI) (30%),fever (22%),Diseases of the female genital tract (17.4%) gastroenteritis(10.6%)%),skin and soft tissue infections (8%),Urinary tract infections (8%),Otitis media (4%) (Fig-1). The empiric antibiotic commonly prescribed were amoxicillin (33%), Cephalexin (21%), Ciprofloxacin (19%), Azithromycin (14%), Doxycycline (8%), and Trimethoprim-Sulfamethoxazole (5%) (Fig-2). The duration of antibiotic administration varies (5 days-14 days) depending upon the type of the disease.

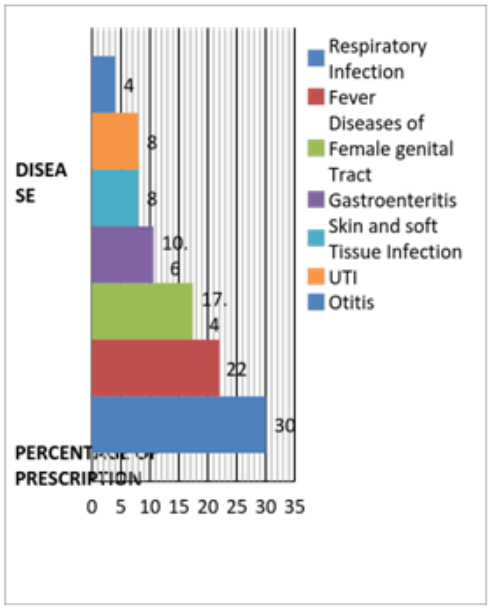

Fig.1. Indication for empirical antibiotics

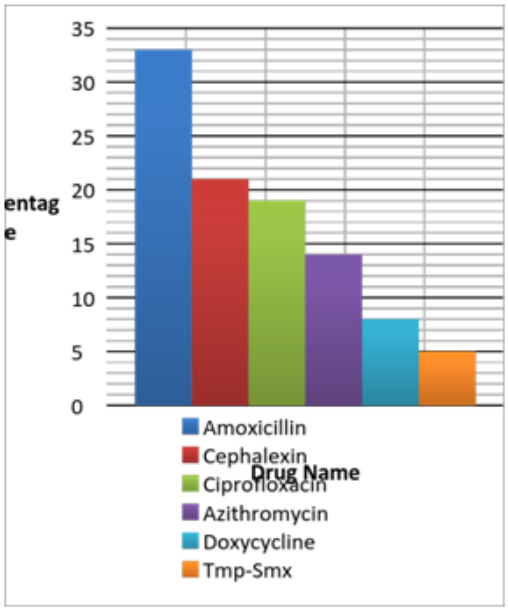

Fig 2. Details of empirical antibiotic prescribed

IV. Discussion

The assessment of drug utilization pattern is an important tool for clinical, educational, and economic purposes.[8] The present study regarding the pattern of empirical antibiotic prescribing in outpatient departments revealed that the respiratory tract infection (30%) [9] was the commonest cause which warrants the empirical antibiotic treatment and the next cause was fever (22%).The usage of antibiotics to control fever was a traditional practise [10] but the recent guidelines advise not to use antibiotics empirically[11] since many times it was due to a simple viral infection [12]. Prescribing empirical antibiotics in those conditions would eventually lead to development of antibiotic resistance. The duration of administration varies depending upon the drugs, ranging from 5 days-14 days. Upto 20% of prescriptions advise antibiotics for conditions which does not require

empirical antibiotics in disease conditions like viral etiological problems (65%) ,Single episode of Diahorrea (26%), Clinical condition without any localizing signs (9%). Thus the usage of empirical antibiotics almost and always causes development of drug resistant organisms.

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V. Conclusion

Every doctor can help to prevent antibiotic resistance in our country by avoiding prescribing antibiotics un necessarily to viral infections unless it is proved to be superadded infection. Without a confirmed diagnosis we are proving ourselves to be equal to quacks, in fact we are worse than them. Even if new medicines are developed, without behaviour change, antibiotic resistance will remain a major threat Behaviour changes must also include actions to reduce the spread of infections through vaccination, hand washing, practising safer sex, and good food hygiene .The world urgently needs to change the way it prescribes and uses antibiotics. A thorough prescription audit, strict antibiotic policy of the hospital and continuous education of all persons dealing with antibiotics are the need of the hour and that will save the **humanity as a whole in the long run**.

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