Drug prescription pattern in paediatric out patient clinic in a tertiary hospital

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Abstract

A prescription by a doctor may be taken as a reflection of physician’s attitude to the disease and the role of drug in its treatment. Feedback from the study would help both the prescriber and institutional authorities to review their prescribing practices and modify if neces-sary to facilitate better health care delivery. To evaluate the prescription patterns and to generate data on rational/irrational prescribing in patients suffering from upper respiratory tract infections attending paediatric OPD at a tertiary hospital. A prospective cross sectional study was conducted and the prescription data of patients with upper respiratory tract in-fec-tion were collected for a period of three months. A total of 667 drugs were prescribed to 300 patients suffering from upper respiratory tract infection. Drug classes with largest rep-resentation were the antibiotics (37%). Penicillins represented the largest antibiotic drug class (76%). The most commonly used group of drugs were antibiotics out of which penicil-lins were largely prescribed. From the data it is understood that the administration of anti-biotics was inappropriate as the duration of treatment was insufficient (3 days). Over pre-scription of antibiotic for insufficient duration may increase the risk of resistance.

Key words: URTI, Prescription patterns, Antibiotics resistance

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Introduction

A prescription by a doctor may be taken as a reflection of physician’s attitude to the disease and the role of drug in its treatment. It also provides an insight into the nature of health care delivery system. Prescription writing is a sci-ence and an art, as it conveys the message from the pre-scriber to the patient. Infants and children are among the most vulnerable population groups to contract illnesses. The use of antimicrobial agents, especially antibiotics has become a routine practice for the treatment of paediatric illnesses[1,2]. However, there are also reports of an irra-ational use of antibiotics [3,4] which may even lead to in-fec-tions that are worse than the originally diagnosed ones. Irrational prescription of drugs is a common occurrence in clinical practice [5] In the medicine practice, there is a growing concern regarding the irrational prescription pat-tern and use of antibiotics.

The assessment of drug utilisation is important for clini-cal, educational and economic reasons[6]. Various factors influence the prescribing behaviour of clinicians and to change the behaviour it is necessary to understand the reasons behind it[7]. It is necessary to define the prescrib-ing pattern and to target the irrational prescribing habits for sending a remedial message[8]. Drug Utilisation Re-views (DURs) are useful for obtaining information about drug usage patterns and for identifying high cost drugs, which are of economic interest[9]. Data about drug usage patterns in India are particularly lacking. Keeping these facts in consideration the present study has been planned to define the pattern of antibiotic use in the paediatric out-patient department at a tertiary care hospital in Hubli, Karnataka, India. The treatment of diseases by the use of essential drugs, prescribed by their generic names, has been emphasized by WHO and National health policy of India [10]. Upper respiratory tract infection is the most common morbidity in paediatric age group. It is a loose term which includes infections of nasal cavity, throat, nasopharynx, ears and sinuses[11]. Most common organ-isms causing upper respiratory tract infections are S. pneumonia (30%), H. influenza (20%) and M. catarrhalis (12%) [12]. The present study was undertaken to evaluate the drug prescription patterns in patients suffering from upper respiratory tract infections attending the paediatric out patient department and to generate data on the extent of rational/irrational prescribing in this institute. Feedback from the study would help both the prescriber and institu-tional authorities to review their prescribing practices and modify if necessary to facilitate better health care deliv-ery.
Materials and Methods

A prospective cross-sectional study of three months duration was undertaken from March 2009 to May 2009. The study was conducted in the paediatric out patient department and 300 prescriptions given to the patients suffering from upper respiratory tract infection were collected. Basic drug indicators were selected to analyze the prescribing patterns[13]. Patient (name, age, out patient number) and drug data (average number of drugs/prescription, percentage of drugs prescribed by generic name and per-centange of prescriptions with an antibiotic prescribed) were recorded. Permission to conduct the study was taken from the Head of the department of Paediatrics. Prescribing frequency was expressed as a percentage of the pre-scription of the individual drug/drug class in a particular age/sex category to the total number of patients in the particular age/sex category. Further whether the drugs were prescribed using generic names or brand names was also studied.

Results

Out of 300 prescriptions, a total of 667 drugs were pre-scribed. The average number of drugs per prescription was 2.22. Percentage of drugs prescribed by generic name was 96%. Out of 667 drugs, the most frequently pre-scribed drug classes were antibiotics (37%), antipyretics (32%), antihistamines (28%), bronchodilators (2%) and H2 receptor blockers (1%)(Figure 1). Antibiotics were present in 247 (82%) of 300 prescriptions and constitute 37% of total number of drugs. Out of 247 antibiotics used, the most frequently used antibiotics were amoxicil-lin (72%), cephalexin (17%), cotrimoxazole (4%), eryth-romycin (2%) and ciprofloxac-an (1%)(Figure The average duration of antibiotic prescription was 3 days. Most of the prescriptions contained the patient and drug information data – patient’s name, age, out patient number, strength, dose, dosage form, frequency and duration of treat-ment. Most of the patients recovered after receiving the treatment with antibiotics. But some did not respond to antibiotics which could be because of the viral infection.

Figure 1: Five most commonly prescribed classes of drugs (n=667)
Discussion

The most commonly used drug group was antibiotic. The prescribing prevalence of antibiotics was also high (82). The excessive use of antimicrobials is similar to the reports from other developing countries[14,15]. In the developing countries, bacterial infections account for much of the morbidity and mortality. This kind of statistic forms the most important index of ongoing antibiotic audit programs as it indicates the changes in the pattern of usage and in susceptibility patterns of bacteria that cause upper respiratory tract infection. As most of the population in developing countries exist under conditions of poverty, inadequate medical care, poor sanitation and nutrition[16], bacterial infection account for much of the morbidity and mortality particularly in the paediatric age group[17,18]. Antimicrobial drug use rates are highest for children[19]; therefore, the pediatric age group represents the focus for the present guidelines. Antimicrobial resistance among respiratory pathogens has become a common clinical problem and its management a part of routine office practice. Currently, ~90 of Moraxella catarrhalis and 25% of nontypeable Haemophilus influenzae produce -lactamase[20], requiring treatment with -lactamase-stable cephalosporins or combination drugs that include -lactamase inhibitors such as amoxicillin-clavulanate. The widespread use of antimicrobials, whether appropriate or inappropriate, has driven the emergence and spread of resistant organisms. The association of resistance with the use of antibiotics has been documented in both inpatient[21] and outpatient[22] settings. Children can be protected from resistant bacteria through the judicious use of antimicrobial agents by their health care providers. The pattern of use observed was that amoxicillin was most commonly prescribed, which comes under penicillin group of drugs. Obviously, this is due to the limited choice of drugs available in the hospital. The most common bacteria causing upper respiratory tract infection – Streptococcus pneumoniae – is sensitive to penicillin group of antibiotics[23] which justifies the prescription of amoxicillin to these patients. Amoxicillin being one of the older and most effective antibiotic in the treatment of upper respiratory tract infection, it is advisable to preserve this antibiotic for future use by prescribing alternative effective antibiotics for an appropriate duration. It is noteworthy that ciprofloxacin was prescribed to only 1% of patients with upper respiratory tract infection because of its toxic effects in children. In this study, 96% of the prescriptions were by generic names of drugs which according to WHO and National Health Policy of India is appropriate. Average number of drugs per prescription (in a prescription audit) is an important index of the scope for review and educational interventions in prescribing practices.

Conclusion

The appropriate use of antibiotics delays the development of drug resistance by microorganisms. As per the data, the use of antibiotics like amoxicillin, cephalaxin and erythromycin in the treatment of upper respiratory tract infection is justifiable as the micro-organisms causing it are sensitive to the antibiotics. The most commonly used group of drugs were antibiotics out of which penicillins were largely prescribed. The patients are mostly from the rural areas. It is very inconvenient for them to get the refill of prescription and to come all the way from distant places. From the data it is understood that administration of antibiotics was inappropriate as the duration of treatment was insufficient (3 days), as most of the patients required treatment for 5 days. Overprescription of antibiotic for
insufficient duration may increase the risk of resistance. Significant overlap exists in the clinical manifestations of bacterial and viral infection, which can lead to irrational prescribing of antibiotics for viral respiratory infections. From this study, feedback information can be provided to the prescribers and authorities of the institute to improve the prescription patterns and also to evaluate clinical picture appropriately so as to avoid antibacterial prescription for viral cases and enable the patients to get the prescription for the required period. The results indicate considerable scope for improving the prescribing pattern of drugs in the Paediatric OPD. The improvement would be facilitated by providing feedback, prescriber education and creation of a hospital formulary. The study provides baseline data for carrying out further therapeutic audit with more parameters of analysis which in turn will provide regular feedback to researchers and prescribers.

References


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