

Original Article

PRESCRIBING PATTERN OF ANTIBIOTICS AMONG OUTDOOR PATIENTS IN MEDICINE DEPARTMENT OF TERTIARY CARE HOSPITAL IN NORTHERN INDIA

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ABSTRACT

Objective: The objective of the present study was to examine the prescribing pattern of antibiotics in the outpatient department of medicine in a tertiary care hospital.

Methods: This prospective observational study was conducted in department of pharmacology in collaboration with department of medicine of Govt Medical College Kathua for a period of one month. Prescription of all patients attending medicine OPD who were prescribed antibiotics was analysed.

Results: A total of 450 prescription of OPD patients were analysed. Out of these 200 prescriptions of patients had antibiotics prescribed. 98% of prescriptions had oral antibiotics and other 2% were prescribed injectable antibiotics. 70 % of prescriptions were on the single antibiotic and in 30% of prescriptions, fixed-dose combination were prescribed. Cefpodoxime antibiotic was most commonly prescribed in the cephalosporin group, followed by amoxy-clavulanic acid, azithromycin. Irrational prescribing of antibiotics was 34% and it was quite high in our study.

Conclusions: Cefpodoxime was most commonly prescribed in cephalosporin group among all antibiotics. Irrational prescribing was quite high in present study. Our result calls for the urgency of refresher courses like stewardship programmes regarding antibiotic use to avoid irrational usage.

Keywords: Antibiotics, Rational, Prescriptions

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INTRODUCTION

Antibiotics are the most common prescribed group of drugs. The overuse of antibiotics is a global issue. Antibiotic usage tends to be costly, has the potential to cause various side effects and may also result in emergence and increase of bacterial resistance [1-3]. In India, they account for more than 50% of the drugs sold. A study has shown that in 75% of the prescriptions, the antimicrobials are prescribed and whether they are indicated or not is not clear but still they are prescribed [4]. Moreover, many Indians take antibiotics without a doctor's prescription even for something as simple as common cold.

Factors which can lead to development of resistance of antibiotics include over usage, overprescribing, taking antibiotics even for viral infections and for incomplete duration, inadequate patient counselling, buying over the counter antibiotics, and patient buying as many as they can afford [5]. There is a strong positive correlation between antimicrobial resistance and consumption of antibiotics [6, 7]. Antimicrobial resistance possesses a serious threat to human health and welfare and undermines national economies worldwide, thus antimicrobials should not be used to treat non-bacterial infections. This notion derives from a fundamental perception of the rational use of medicines that these should be used appropriately, in accordance with clinical needs [8, 9]. The proper use of antibiotics can lead to decrease in morbidity and mortality due to various infections. So, in an attempt to evaluate the rational use of antibiotics, the present study was undertaken to study prescribing pattern of antibiotics in the medicine OPD of tertiary care teaching hospital which would provide valuable information. Prescribing errors (irrational prescribing and lacunae) thus found related to the prescription of antimicrobial would be highlighted and would further help in improving health care and patient safety.

MATERIALS AND METHODS

Study population and design

The Present study was a prospective observational study carried out in the department of pharmacology in collaboration with the

outpatient department of medicine of Government Medical College Kathua for a period of one month. A total of 200 prescriptions of patients who were prescribed antibiotics were clicked on mobile and then analysed.

The study protocol was as per the guideline of the declaration of Helsinki and was approved by the institutional ethical committee before starting the study vide number IEC/GMCK/21/Pharma. Dated 18/2/2020. Data was collected and analysed for the patient's demographic profile, indications of antibiotics, their dose, duration and route of administration were analysed.

Inclusion criteria

The following criteria were included in the study

- Patients of either gender, aged 18 y and above.
- Patients of an outpatient department

Exclusion criteria

The following criteria were excluded from the study

- Patients of either sex aged less than 18 y of age
- Patients admitted in medicine ward.
- Patients who are not willing to cooperate.

RESULTS

Total 450 prescriptions of OPD patients were examined. Out of these 200 prescriptions had antibiotics constituting 44.4%. These 200 prescriptions were analysed for antibiotic prescribing pattern. Out of these 200 patients, 108 (54%) were males and 92 (46%) were female. Male and female patient's ratio was 1.17:1. Majority of patients were above 40 y of age (70%). While 30% of patients were between 18yrs and 40 y (table 1).

Table 1: Demographic profile of patients attending medicine OPD

Gender	No of patients		Percentage
	Male	108	54
	Female	92	46
Age	18-40	60	30
	>40	140	70

Table 2: Diagnosis for prescribing antibiotics

S. No.	Diagnosis	Number	Percentage
1.	Urinary tract infection	36	18
2	Respiratory tract infection	36	18
3	Bronchitis	20	10
4	Lumber ache	20	10
5	Breathlessness	16	8
6	Pyrexia	16	8
7	Pain abdomen	12	6
8.	Haemoptysis	8	4
9	Sore throat	8	4
10.	Headache	8	4
11.	Diarrhoea	8	4
12	Pulmonary Koch	4	2
13	Generalized body aches	4	2
14	Pain chest	4	2
Total		200	100%

Table 3: Antibiotics prescribed as monotherapy

S. No.	Antibiotic	Dosage	Dose	Duration	No. (%)
1.	Cefpodoxime	Oral	200 mg	3-5 d	72 (36)
2	Azithromycin	Oral	500 mg	3-5days	24 (12)
3	Ofloxacin	Oral	200 mg	5-7days	16 (8)
4.	Cefixime	Oral	200 mg	3-5days	16 (8)
5	Amoxicillin	Oral	500 mmg	3-5 d	8 (4)
6	Ceftriaxone	Injection(I/V)	1000 mg	3-5 d	4 (2)

Table 4: Antibiotics prescribed as fixed-dose combination

S. No.	Antibiotics	No (%)	Dose	Dosage
1	Amoxicillin+Clavulanic acid	40 (20)	500+125 mg	Oral
2	Ofloxacin+Ornidazole	16 (8)	200+500 mg	Oral
3	Ciprofloxacin+Tinidazole	4 (2)	500+600 mg	Oral
Total		30%		

Table 5: Irrational prescribing of antibiotics in percentage

Lumber pain	10
Breathlessness	8
Pain abdomen	6
Headache	6
Generalized body aches	2
Pain chest	2
	34%

Evaluation of prescriptions revealed that urinary tract infection and respiratory tract infections were frequent indications for usage of antibiotics amounting to 18% each and was followed by bronchitis, lumber ache (10%) and breathlessness and pyrexia (8%) (table 2).

Analysis of prescriptions for the category of antibiotics showed that cefpodoxime was most frequently prescribed drug amounting to 36%. Amoxicillin+clavulanic acid was next in the frequency of prescribing (20%). Azithromycin was prescribed in 12% of the patients followed by ofloxacin, cefixime, ofloxacin-ornidazole (8%). Amoxicillin was prescribed in 4%, whereas ciprofloxacin-tinidazole and ceftriaxone were least prescribed (2%) each. In the present study cefpodoxime, amoxicillin-clavulanic acid and azithromycin were the commonest and antibiotics prescribed mostly as monotherapy (70%) or fixed-dose combination (30%) (table 3, 4)

Irrational prescribing of antibiotics was found in 34 % of patients and where the antibiotics were prescribed for wrong diagnosis (table 5). A total of 200 antibiotics were prescribed with average of one antibiotic per prescription.

DISCUSSION

Antibiotics are the most common group of drugs prescribed worldwide in the hospital [10]. These are defined as substances produced by the microorganism, which selectively suppress the growth of or kill the other microorganism at very low concentrations [11, 12]. A prescription-based survey is considered to be one of the most effective method to assess and evaluate the prescribing attitude of the physician [13, 14].

The current study of prescribing pattern of antibiotics was studied in tertiary care hospital in the medical outpatient department of Govt. Medical College Kathua.

Numerous studies have revealed that the prescribing pattern of antibiotics is vital for the management of infective diseases [14-16].

However, the irrational prescribing of antibiotics like under dose, overdose and not prescribing for right ailment do carry risk of resistance and adverse drug effects.

In the present study antibiotics were most common medication prescribed and constituted 44.4 % of all prescriptions. Various studies in past have also documented high rate of antibiotics prescribing among OPD patients. In Sudan it is reported to be 63%, Iran 61.9%, England 60.7% and Norway 48% [17, 18]. These observations are in concurrence to results of present study. However, as low as 16.2% antibiotic prescription in OPD and emergency room has also been recorded in other study, which is considerably less than our observation [19].

In current study most of patients who were prescribed antibiotics were above the age of 40years (70%). Our results are in agreement with other studies who also have demonstrated that most patients reporting to medical OPD were over 40 y [16, 20]. In present study males were more than females (54%) and this indicates that males were more exposed to environmental influences than females and similar results were reported in other studies who have also shown male preponderance [15, 21, 22]. While in contrast some studies have also reported prevalence of females over males [16].

Evaluation of prescriptions revealed that urinary tract infection and respiratory tract infections were frequent indications for which antibiotics were prescribed amounting to 18% each and were followed by bronchitis, lumbar ache (10%). In another study respiratory tract infection (21.5%), viral fever (12%), urinary tract infection (8.5%) and acute gastroenteritis (7.5%) were recorded as common conditions for which antibiotics were prescribed [15].

Analysis of prescription for the category of antibiotics showed that cefpodoxime was most frequently prescribed amounting to 36%, Amoxicillin+clavulanic acid was next in frequency of prescribing (20%), Azithromycin was prescribed in 12% of the patients followed by ofloxacin, cefixime, ofloxacin-ornidazole (8%). Earlier study has also documented most common antibiotics prescribed were cephalosporins followed by fluoroquinolone, penicillin and nitramidazolone and amikacin [15]. In one more study conducted in South India revealed that 30 % of patient had fluoroquinolones followed by cephalosporins and other antibiotics [22]. Ceftriaxone was the most commonly used antibiotic among cephalosporins in their study but in our study cefpodoxime was most commonly used antibiotic in cephalosporin group. Cephalosporins are generally extensively prescribed due to their potent action and availability in various formulations in the market.

In present study 30% of antibiotics were prescribed in fixed dose combinations (FDCs), while in 70% of patients single antibiotic was prescribed, whereas no patient was prescribed more than one antibiotic per prescription. Newer antibiotics can cover the wide spectrum of organism in mixed infections, therefore, use of single antibiotics are now the preferred antimicrobial therapy and moreover immunotherapy is relatively nontoxic and less costly than combination therapy [23].

In our study maximum number of patients (98%) received antibiotics in oral dosage forms and only 2% of patients were prescribed antibiotics as parental and none of the patients was prescribed as topical preparation of antibiotics. In our study the route of administration doses, dosage forms and duration of treatment were in accordance with the standard treatment guidelines.

Current study revealed very high percentage of patients (34%) was irrationally prescribed antibiotics for conditions those did not need the antimicrobials. Our study underscores that irrational prescribing is a major issue even at tertiary care hospitals. There are number of studies those have also shown high irrational antibiotics prescribing [14-16]. If the self-medication of antibiotics which quite prevalent is taken into account, then situation becomes more alarming. This situation therefore calls for reorientation courses for doctors in rational therapy.

CONCLUSION

Irrational prescribing of antibiotics was found quite high in present study (34 %). Cephalosporin's were most frequently prescribed

antibiotics and among them cefodoxime was most commonly prescribed. Fixed dose combination was prescribed in 30% and among them Amoxicillin plus clavulanic acid was preferred. Our result calls for urgency of refresher courses like stewardship programmes regarding antibiotics use to avoid irrational usage and will go long way to combat antimicrobial resistance and financial loss.

LIMITATIONS OF THE STUDY

This study has some limitations. The less number of patients were enrolled in the study and it was of short duration of one month. Further studies are needed to explore the knowledge and attitude of physician towards prescription of antibiotics.

AUTHORS CONTRIBUTIONS

All authors in the study have contributed their equal parts and it was in compliance the journal authorship policy. Suman Lata has collected the data whereas Vijay Khajuria has designed and framed the study. Sanjay has analysed and interpreted the data while Vineeta has revised the article.

CONFLICT OF INTERESTS

The authors declare that they have no conflict of interest concerning the content of this work.

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