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Original Research Paper

Prescribing Pattern of Antibiotics In Inpatients Of Department Of Orthopaedics In A Teaching Hospital Of Ujjain.

Medical Science

KEYWORDS : Antibiotics, Prescribing pattern, Rational use

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ABSTRACT

Antibiotics are frequently prescribed in Orthopaedics. If they are not being used rationally they will lead to emergence of serious antibiotic resistance. This study was planned to evaluate prescription pattern of antibiotics in department of orthopaedics. A prospective observational study conducted from October 2012 to 2013 in C.R.Gardi Hospital,Ujjain. Total 611 patients were included in this study.5416 drugs were prescribed out of which 852 were antibiotics. Average no. of antibiotics per patient was 2.3 and average duration of antibiotic prescription 7.8 days. 75.3% were prescribed two antibiotics. Amikacin was the most frequently prescribed antibiotic. 76.3% were prescribed by injectable route. 27% were prescribed as Fixed Dose Combinations. 19% were prescribed by generic name. 64% drugs prescribed were included in NEML and WHO Essential Medicine List. The percentage of encounters with an antibiotic and an injection prescribed was high. This has to be discouraged. There is an urgent need to develop standards of drug prescription and develop ways and means to ensure that they are adhered to.

Introduction:

Antibiotics are considered as wonder drug, but its irrational use & often inappropriate prescriptions makes it as abused drugs sometimes[1]. Rational antibiotic prescription is very important to avoid multi drug resistant, treatment failure, non-compliance and increase in cost of treatment.[2]

Antibiotics are the most frequently prescribed group of drugs among hospitalized patients, especially in intensive care and surgical departments. Routine surveillances critical for creating and refining approaches to controlling antimicrobial resistance, and for guiding clinical decisions regarding appropriate treatment. The traditional approach has been to monitor pathogen- antimicrobial susceptibility. Numerous large studies have been performed, and their designs have evolved with time[3].

Towards rational use of medicines[4]

The first step to correcting irrational use of medicines is to measure it. Indeed, prescribing, dispensing and patient use should be regularly monitored in terms of:

The types of irrational use of medicines, so that strategies can be targeted to-wards changing specific problems;

The amount of irrational use, so that the size of the problem is known and the impact of the strategies can be monitored;

The reasons why medicines are used irrationally, so that appropriate, effective and feasible strategies can be chosen

Objectives:

This study was conducted to study antibiotics usage in orthopaedics department for two main reasons. Firstly, a large number of antibiotics are being used and also, life threatening antibiotic resistance can result due to its irrational use of antibiotics.

Materials and Method

A prospective observational study was conducted from October 2012 to September 2013, in Chandrikaben Rashmikant Gardi Hospital, a 600 bedded tertiary care rural based, teaching hospital attached to Ruxmaniben Deepchand Gardi Medical College, Ujjain, Madhya Pradesh. The protocol was prepared and presented to Human Research Ethics Committee of the institute and approved by the same.

Patients admitted to orthopaedics wards during the study period. Total 611 patients were included in this study. Patients who were admitted to orthopaedics ward, C.R. Gardi Hospital were included in this study. Data was collected from Case files of Inpatients**.** Patients of all ages and both sexes were included. Each patient, included in the study was followed up every day till patient was discharged from the ward and their case files were reviewed for gathering necessary information with help of a properly designed Data Collection form.

Observation and Results:

There were more male 73.16% (n=447) compared to the female group 26.84% (n=164). More patients were from the age group >60 years 25.70% (i.e.104 males and 53 females). There were 23.08% patients from age group 21-30 years and the least from the age group <20 years 11.62% (i.e. 60 male and 11 female patients). A total of 5416 drugs were prescribed. A brief description of the demographic data is presented.

Demographic Data

Table 1 shows the frequency distribution of the demographic data with respect to gender and age group of total patients observed during study period. There were more male 73.16% (n=447) compared to the female group 26.84% (n=164). More patients were from the age group >60 years 25.70% (i.e.104 males and 53 females). There were 23.08% patients from age group 21-30 years and the least from the age group <20 years 11.62% (i.e. 60 male and 11 female patients).

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Table 1: Age and sex wise distribution of total patient observed

Age Group	Male	Female	Total	Percentage
<20 years	60	11	71	11.62%
21-30 years	121	20	141	23.08%
31-40 years	63	16	79	12.92%
41-50 years	58	29	87	14.24%
51-60 years	41	35	76	12.44%
>60 years	104	53	157	25.70%
Total (Percentage)	447 (73.16%)	164 (26.84%)	611	100%

Table 2: Various Diagnosis for which patients were admitted

Diseases	Percentage	
Fracture	58.43	(n=357)
PIVD	15.87	(n=97)
Dislocation	5.25	(n=32)
Pott's Spine	5.89	(n=36)
Rheumatoid Arthritis	4.58	(n=28)
Osteoarthritis	1.96	(n=12)
Others	8.02	(n=49)

Total number of antibiotics prescribed were 852. Antibiotics were prescribed in 368 patients. Out of which 277 patients (75.3%) of them were prescribed two antibiotics. Four antibiotics in 69 patients (18.7%) have been prescribed and single antibiotic in 22 patients (6.0%) . Average number of antibiotic per patient was 2.3 and average duration of antibiotic prescription is 7.8 days.

Amikacin was the most frequently prescribed antibiotic (28.05%) followed by Ceftriaxone+Tazobactum (19.60%), Ciprofloxacin (10.09%) and Metronidazole (9.15%)

Among 15 different antibiotics 4 were prescribed as fixed dose combinations which means 27% were FDCs. Cefoperazone + Sulbactum, Sulphamethoxazole + Trimethoprim, Amoxicillin + Clavulanic Acid, Ceftriaxone + Tazobactum were the FDC's prescribed. All four of them are rational combinations.

Antibiotics prescribed by injectable route were 650(76.3%) out of total 852 prescribed antibiotics. Most of them were prescribed by intravenous route. Antibiotics prescribed by Generic name were only 19% (n=162) of the total antibiotics prescribed (n=852) which is very low. Antibiotics prescribed from Essential Medicine List 2011 and WHO List was 64%.

Analysis of Antibiotic Use

Table 3 : Number of antibiotics prescribed per encounter

No. of antibiotics	No. of patients (%)
1	22 (6.0%)
2	277 (75.3%)
4	69 (18.7%)
Total	368 (100%)

Figure 1: Distribution of Different Antibiotics Consumed

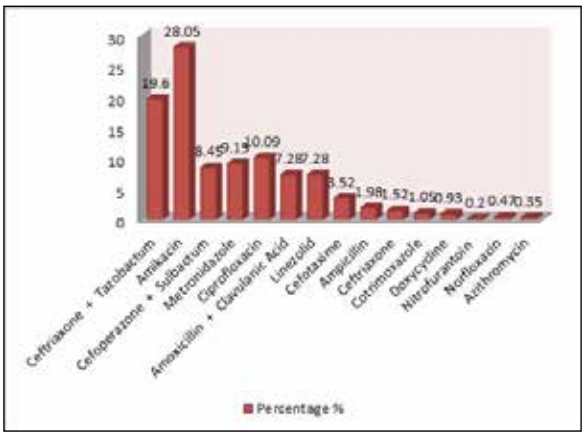


Figure 2: Percentage of FDCs among prescribed antibiotics

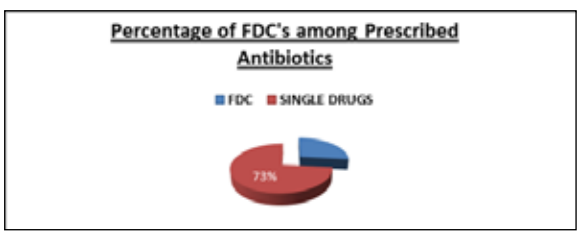


Figure 3 : Antibiotics prescribed by Injectable route

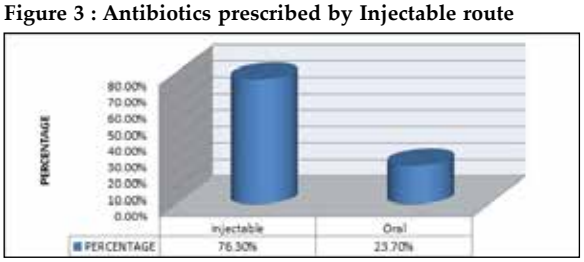


Figure 4 : Antibiotics prescribed by Generic name

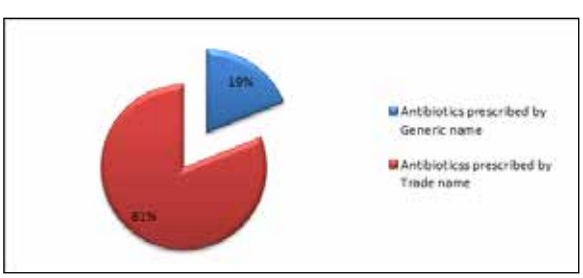
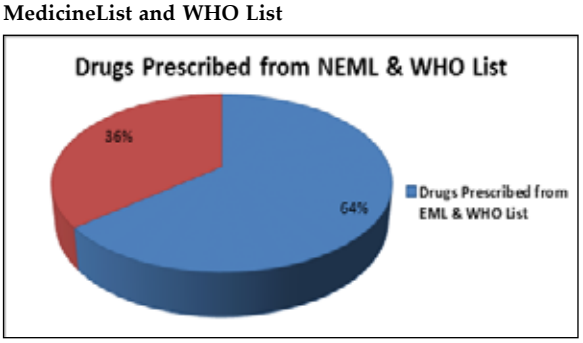


Figure 5 : Antibiotics prescribed from National Essential MedicineList and WHO List



Discussion:

This is a prospective observational study conducted from October 2012 to September 2013, in Department of Orthopaedics, Chandrikaben Rashmikant Gardi Hospital, Ujjain, M.P. A total of 611 prescriptions were observed during the study period. A total of 5416 drugs were prescribed.

It was observed that majority of patients were in the age group of >60yrs 25.70% (104 males and 53 females) followed by 23.08% patients from age group 21-30 years. A greater proportion of older persons have been also seen in patients in previous studies done in northern India[5].

A possible reason could be the high proportion of old people develop age related bone changes which make them prone to fractures after trivial trauma. The next peak in age group of 21-30 years may be because this age group is more active and communicating therefore there are more chances for them to meet accidents.

Sex wise distribution of patients shows that male patients (447 out of 611) were found more than females (164) in this study. Male dominance was also found in the studies done by Gupta et al[5]. This may be due to male dominance in society, as they are involved in outdoor activities and are earning members of the family, thus they are more exposed to trauma.

The most common diagnosis in our study, for which patients were admitted was Fracture of different parts of body. The commonest indications were low back ache and spondylosis in study done in Nepal[6]. This may be because only out patients were included in their study.

Antibiotics were prescribed in 60.23% of encounters. In a previous audit of prescriptions, antibiotics were prescribed in 47.8% of encounters[7]. In Nigeria, antibiotics were prescribed in 50.3% of Encounters[8]. The use of injections (63% of encounters) in our study was very high compared to that observed by Rehan *et al*[9]. But due to different patient populations the values are not comparable. The higher number of encounters with an antibiotic or injection prescribed is a warning sign and has to be discouraged.

Antibiotic prescription (60.23%) is slightly less than reported in both eastern and western countries, e.g. Sudan (63%)[10], Iran (61.9%)[11] and England (60.7%)[12].

Average Antibiotic prescribed per patient was 2.3 and average Duration was 7.8 days.

The mean number of drugs prescribed was slightly higher than that reported in a previous

study [13] but other hospital based studies in India reported 3-5 drugs per prescription which was justified in this study[14,15]. It is preferable to keep the number of drugs per prescription as low as possible since higher figures lead to increased risk of drug interactions, adverse effects and increased cost to the patient. In our hospital antimicrobials were prescribed empirically (97%) based on the likely pathogen, the available drugs & the severity of the conditions. It is worth noting that both under- and over-prescribing of antibiotics pose important problems in clinical practice. During the study period, the most commonly prescribed antibiotic was Amikacin (28%) followed by Ceftriaxone + Tazobactum (19.6). β lactum antibiotics were most commonly used in a study done by Bithi et al[16].

19% of Antibiotics were prescribed by Generic name which is nearly equal to another study done in Bangladesh[17]. Generic prescribing is to be encouraged as it works out to be cheaper for the patient and the possibility of drug errors is reduced. 64% drugs prescribed were from NEML 2011.

Most of the patients were prescribed two antibiotics 75.3% and only 6% were prescribed one antibiotic. Mono antibiotic therapy was preferred in another study[16].

Conclusion:

This study has given an insight into the pattern of Antibiotics prescribing upon which future intervention studies may be based to promote rational drug use. The percentage of encounters with an antibiotic and an injection prescribed was high. This has to be discouraged. There is an urgent need to develop standards of antibiotic prescription and develop ways and means to ensure that they are adhered to. Special attention needs to be given to the irrational prescribing in terms of polypharmacy and long duration.

Antibiotic policy and standard treatment guidelines are being framed. A check on the influence of pharmaceutical companies needs to be maintained in health institutions, to minimize their influence on the drug prescription. All these measures would go a long way in providing optimal, low cost, and effective medicines to the patients.

Although our study has been conducted using a reasonably good sample size making various parameters quite trustworthy but the limitation of our study could be the smaller sample size. The robustness of our findings could have been increased by an even larger sample size had the duration of study been longer. Another limitation is that it is a single centre study, hence the validity of findings would increase if it is a multicentre study.

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