IJBCP   **International Journal of Basic & Clinical Pharmacology**

Original Research Article

Prescription pattern of medicines in a tertiary care hospital: a cross-sectional study

Roshi[1], Vishal R. Tandon[1], Brij Mohan Gupta[1], Sanjeev Gupta[2]*

[1]Department of Pharmacology, Government Medical College Jammu, J&K, India
[2]Department of Pharmacology, Government Medical College Rajouri, J&K, India

*Correspondence to:
Dr. Sanjeev Gupta,
Email: roshigupta1986@
gmail.com

ABSTRACT

Background: Prescribing drugs for any disease is not complete until it is rationally done. Irrational prescriptions often lead to treatment failure, toxicity or drug interactions which may prove detrimental to the patient. Antibiotics are very much prescribed in day to day practice but their rational use prevents treatment failure, resistance.

Methods: A cross sectional study was conducted in a tertiary care hospital to see the antibiotic prescribing pattern. Prescriptions were screened one time from different OPDs with prior permission from the doctor attending the respective OPD.

Results: A total of 200 prescriptions were assessed out of which 121 had monotherapies prescribed, 79 had FDCs. Antibiotics were the most commonly prescribed drugs. Prescriptions having drug combinations were assessed and pantoprazole domperidone was the most commonly prescribed (32.91%).

Conclusions: Drugs should be prescribed rationally for proper therapeutic benefit. It encourages the patient to properly use the medicine and properly comply to it.

Keywords: Antibiotics, Fixed drug combinations, Generic drugs, Injectables, Prescription, Trend

INTRODUCTION

In the modern era, medicines play an unprecedented role which has reduced mortality, morbidity and over all quality of life.[1] Rational use of medicine is the backbone of good clinical practice. As per Alma Atta declaration also, proper treatment of commonly occurring disease and injuries is essential.[2] Rational prescribing is purely in the hands of the prescriber. Prescription eventually decides whether the medicine will benefit or harm the patient. Antibiotics are one of the important pillars of medical care and are very useful in treatment or prophylaxis of infections. The availability, selection and proper use of antibiotics is very important to avoid resistance and for proper benefit of the patient.[3-5] Essential medicines are those which are available at all the times and satisfy the health care needs of all the people as per WHO.[6] In view of this medicines which do not meet the needs of patients in terms of disease condition, dose, frequency, duration of therapy is termed as irrational use of medicine.[6] Rational use of medicine encourages the patient to rightly use medicine and properly comply to it. It also prevents

irrational use of drug combinations which have no added effect on therapeutic value and increased burden of cost. Cost effective prescribing is also important in developing country like ours.

Antibiotics are main line of treatment in case of infections like upper respiratory infection, lower respiratory tract infection, urinary tract infections, skin infections, gastrointestinal tract infections etc. Antibiotics also have a prophylactic role in case of various conditions like in surgeries, pre-term labour and many other clinical conditions. Irrational antibiotic use includes improper dose, improper duration, improper combinations, improper indications.[7] This may lead to antibiotic resistance. Ideally culture sensitivity test should be done before prescribing antibiotics. The present study was conducted to have an audit about the prescribing trend of antibiotics to have an insight about its rational and irrational use. Irrational use of antibiotics often adds to economic burden, disease burden and decreases the quality of life.[8]

METHODS

A cross sectional study was conducted in a tertiary care hospital to see the antibiotic prescribing pattern. A total of 200 prescriptions were assessed. Prior permission was taken from Institutional Ethics Committee, GMC Jammu, India. In Medicine Out Patient Department prescriptions were screened one time randomly. Prior permission was taken from the doctor attending the OPD. No follow up was done. The prescriptions were screened for different parameters like medicine prescribed, dose form of medicine, drug combinations, monotherapies prescribed. Rationality of drug combinations was also assessed. Mobile was used to take a click of prescription. The patient was made to understand the purpose of this before taking the prescription. The same methodology was followed for a period of one week. It was a cross sectional study. The data was tabulated and was expressed in percentage.

Inclusion criteria includes all the prescriptions from medicine OPD for the said period. Exclusion criteria includes follow up prescriptions from emergency were not assessed.

RESULTS

Table 1: Prescription pattern.

Parameter	Number (Percentage)
Total prescriptions	200
Prescriptions having monotherapy	121(60.5%)
Prescriptions having injections	34(17%)
Prescriptions having FDCs	79(39.5%)
Prescriptions having generic drugs	39(19.5%)
Prescriptions having herbal drugs	12(6%)

A total of 200 prescriptions were assessed out of which 121 (60.5%) had monotherapies prescribed, 79(39.5) had FDCs. 34 (17%) prescriptions had injections prescribed, 39 (19.5%) prescriptions had generic drugs, 12 (6%) had herbal drugs (Table 1).

There were 57 (28.5%) prescriptions had antibiotics, followed by proton pump inhibitors in 50(25%) prescriptions, 20(10%) prescriptions had painkillers and antihypertensives each. 35 (17.5%) prescriptions had antidiabetic drugs, 23 (11.5%) had antirheumatoid drugs. Only 9(4.5%) prescriptions had anti gout drugs and only 6 (3%) prescriptions had hypolipidemic drugs (Table 2).

Table 2: Number of prescriptions having different classes of drugs.

Drug Class	Number (percentage)
Antibiotics	57(28.5%)
Painkillers	20(10%)
Antihypertensives	20(10%)
Antidiabetic drugs	35(17.5%)
Hypolipidemic drugs	6(3%)
Proton pump inhibitors	50(25%)
Anti-gout drugs	9(4.5%)
Antirheumatoid drugs	23(11.5%)
Others	20(10%)

Table 3: Number of prescriptions having different drug combinations.

Drug combinations	Number (Percentage)
Amoxicillin clavulanate	5(6.32%)
Ceftriaxone sulbactam	2(2.53%)
Piperacillin tazobactam	1(1.26%)
Ofloxacin ornidazole	6(7.59%)
Norfloxacin Tinidazole	3(3.79%)
Cefixime clavulanic acid	2(2.53%)
NSAIDs Muscle relaxant	12(15.18%)
Paracetamol ibuprofen	5(6.32%)
Cefixime azithromycin	1(1.26%)
Cefpodoxime clavulanic acid	2(2.53%)
Diclofenac sodium and rabeprazole	3(3.79%)
Pantoprazole domperidone	26(32.91%)
Trimethoprim sulphamethoxazole	2(2.53)
Others	9(11.39)

Prescriptions having drug combinations were assessed and pantoprazole domperidone was the most commonly prescribed 62(32.91%), 12(15.18%) had NSAIDs muscle relaxant, amoxicillin clavulanate was prescribed in 5(6.32%) prescriptions, ceftriaxone sulbactam in 2(2.53%), piperacillin tazobactam and cefixime azithromycin was prescribed in 1 (1.26%) prescription each, ofloxacin ornidazole was prescribed in 6 (7.59%) prescriptions, norfloxacin tinidazole in 3(3.79%), cefixime clavulanic acid, trimethoprim sulphamethoxazole and

cefpodoxime clavulanic acid in 2 (2.53%) each, paracetamol ibuprofen in 5 (6.32%), diclofenac rabeprazole was prescribed in 3 (3.79%), while other combinations were prescribed in 9 (11.39%) prescriptions (Table 3).

Only 10 (12.6%) of the FDCs prescribed were rational combinations, rest all were irrational. Rational combinations consisted of trimethoprim sulphamethoxazole, amoxicillin clavulanic acid, piperacillin tazobactam and ceftriaxone sulbactam.

DISCUSSION

Monotherapy was more commonly prescribed than FDCs. In our study 39.5% of prescriptions had FDCs. FDC is pharmacologically acceptable only if the combination has a proven therapeutic and safety advantage over single ingredients administered separately. The pharmacological rationality of FDCs is established if drugs act by different mechanisms and have supra-additive effect, have similar pharmacokinetics profile, and drugs do not have supraadditive toxicity.[9,10] However, irrational prescribing of FDCs is a major health concern in India as irrational fixed dose combination products can be equally harmful. Many of the FDC available in Indian market lack therapeutic rationale for their use, leading to wasteful expenditure.[11-13] Most commonly prescribed FDC was pantoprazole domperidone followed by muscle relaxant NSAID combination, and others. Most of the FDCs (62%) were rational as per WHO Essential Medicine List. Other FDCs 38% were irrationally prescribed. Polypharmacy, as well as inappropriate prescribing, is a major challenge that contributes to costs, adverse drug events, confusion, compliance issues, and errors in management. A systematic approach to drug monitoring is an important aspect of appropriate prescribing. The findings of this study further showed that the percentage of medicines prescribed by generic was 19.5% which is less than the requirement that all medicines should be prescribed in generic. This further call for refresher training for prescribers to confirm to the standards in prescribing medicines for patients as rational use of medicines has become an indicator for measuring quality of health care.[14,15] In our study 17% of prescriptions had injectable drugs prescribed. Globally, the use injections should be kept to the minimum because of the increasing risk of transmission of HIV, hepatitis and other blood related diseases through injection. The low rate of injection use is also likely to reduce the risk of anaphylactic shock, tissue necrosis and sepsis in patients.[16] This study has several limitations. It is a cross sectional study. Number of prescriptions assessed is also less. Duration is short. Other parameters of a prescription like drug interactions could have been assessed.

CONCLUSION

Rational use of medicine is the backbone of rational prescribing of drugs. The present study highlights that drugs are not prescribed by generic names, irrational FDCs are also being prescribed which can prove to be detrimental. There is a need to stress upon the rational use of drugs for right indication, right duration at appropriate dose.

REFERENCES

1. WHO. The pursuit of responsible use of medicines: sharing and learning from country experiences. Vet Rec. 2012;169:78.
2. Declaration of Alma Ata, 1978. Available at: http://www.who.int/hpr/NPH/docs/declaration_almaata.pdf. Accessed on 18 March 2014.
3. Goossens H, Ferech M, Vander Stichele R, Elseviers M. Outpatient antibiotic use in Europe and association with resistance: a cross-national database study. Lancet. 2005;365:579-87.
4. Friedman BC, Schwabe-Warf D, Goldman R. Reducing inappropriate antibiotic use among children with influenza infection. Can Fam Physician. 2011;57:42-4.
5. Teferra A, Mohammed K. The pattern of antibiotic usage in surgical inpatients of a teaching hospital, Northwest Ethiopia. Ethiop J Health Dev. 2004;18(1):35-8.
6. Gebeyehu E, Bantie L, Azage M. Inappropriate use of antibiotics and its associated factors among urban and rural communities of Bahir Dar city administration, northwest Ethiopia. PLoS ONE. 2015;10:e0138179.
7. Gujar A, Tiwari P. Antimicrobial drug use in hospitalized children. CRIPS. 2008;9(1):2-6.
8. Bhartiy SS, Shinde M, Nandeshwar S, Tiwari SC. Pattern of prescribing practices in the Madhya Pradesh, India. Kathmandu Univ Med J (KUMJ). 2008;6(1):55-9.
9. Roy V, Malhotra R, Tayal V, Bansal A, Gupta KS. Fixed dose combinations for cough and common cold in India: an assessment of availability and rationality. Fundam Clin Pharmacol. 2011;25(2):258-66.
10. Desai P, Patel S, Shah R, Desai S. A comprehensive evaluation of rationality of cough and cold medicines available in Indian market. J Indian Med Assoc. 2013;111(2):94-8.
11. Goswami N, Gandhi A, Patel P, Dikshit R. An evaluation of knowledge, attitude and practices about prescribing fixed dose combinations among resident doctors. Pers Clin Res. 2013 Apr;4(2):130.
12. Ferreira MBC, Heineck I, Flores LM, Camargo AL, Dal Pizzol TDS, Torres ILDS, et al. Rational use of medicines: prescribing indicators at different levels of health care. Braz J Pharm Sci. 2013;49:329-40.
13. Wagner AK, Quick JD, Ross-Degnan D. Quality use of medicines within universal health coverage: challenges and opportunities. BMC Health Serv Res. 2014;14:357.
14. Laing R, Waning B, Gray A, Ford N, Hoen ET. 25 Years of the WHO essential medicines lists: progress and challenges. Lancet. 2003;361:1723-9.
15. Canabal J, Caballero T, Caminoa M, Fiandor A, Quirce S, Cabañas R. Anaphylactic shock caused by a hidden

allergen in blood sausage. J. Invest Allergol Clin Immunol. 2016;26:200-1.

16. Prusakowski MK, Chen AP. Pediatric sepsis. Emerg Med Clin N Am. 2017;35:123-38.