

Pattern of medications prescribed for URI (upper respiratory tract infection) patients in medicine OPD of tertiary care teaching hospital, Ujjain

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Objective: To obtain information on prescribing pattern of medications for URTI and comment on its effectiveness. **Materials and Method:** This observational, non-interventional and prospective study was carried out on patients with URTI, >18 years of age and of either sex came to medicine OPD over a period of 3 months. All the relevant information related with prescribed medications were recorded in annexure. Data obtained from the study were entered in MS Excel 2007 and analyzed. **Result:** Most common diagnosis was non specific URTI (50%), in total 96 prescriptions. Total 255 drugs were prescribed with average number of drugs per encounter were 2.65. Total percentages of encounters with antibiotic prescribed were 47.91%. Total numbers of FDCs prescribed were 10.38%, which include terbutaline+ambroxol (62.50%), amoxicillin+clavulanic acid (33.34%) and ampicillin+cloxacillin (4.16%). Total 47 antibiotics were prescribed, which were amoxicillin (28), amoxicillin+ clavulanic acid (9), azithromycin (9) and ampicillin+ cloxacillin (1). Out of total 255 drugs, antihistamines (27%, cetirizine) were prescribed for maximum number of time, followed by demulcents (20.24%, linctus syrup), antibiotics (19.02%), NSAIDS (18.21 %, paracetamol), bronchodilator (6.07%, terbutaline), mucolytic (6.07%, ambroxol) and antacids (3.23%, ranitidine). **Conclusion:** Proper and effective prescribing pattern of medications, for any condition, is required to improve drug efficacy, decrease cost of therapy, adverse effects, drug-drug interaction and drug resistance

Keywords: Polypharmacy, Antibiotic resistance, FDCs (Fixed Dose Combinations), Antihistamines

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Introduction

Upper respiratory tract infection (URTI) is the commonest reason for consulting general practitioners, in both children and adults [1]. It accounts for 20-40% of outpatient attendance in a General Hospital [2]. The causes for condition URTI range from self-limiting conditions such as the common cold to the more serious bacterial infection [3].

Though URTI is self-limiting condition, over-prescribing of medications for it is serious problem widespread globally. [4]. These medications include different drug groups like, demulcents, cough suppressants, expectorants, bronchodilators and antibiotics and Fixed Dose Combinations (FDCs) of medications from above mentioned groups. There are over thirteen hundred drug products for URTI in the Indian market, which is an increase of 71.2% from the year 2001. Majority of the preparations are fixed-dose combinations (FDCs) and have 3-4 constituents. The number of such banned drug combinations showed an increase from 9 in 2001 to 27 in 2007, which increase the chances of prescribing banned drugs to the patients and increase in complications [5].

The antibiotic prescribing rate is also increasing day by day for URTI. In 2003, the antibiotics prescribing rates for cold, URTIs and acute bronchitis were 61%, 63%, and 72%, respectively, in US [6]. In Canada, France, Germany, Italy, Spain and the UK, prescribing of antibiotics ranges from 32% to 74% [7]. The effectiveness of antibiotic prescriptions in many of these cases can be questioned, because URTI can be caused by viruses, which are mainly self-limiting [8,9]. Usually in general practice, therapy is started before a laboratory report is available and, consequently, antibiotic therapy has to be initiated on an empirical basis, guided by the physician's best guess of what etiological agents are most likely to be involved. There is also tremendous pressure on doctors from both pharmaceutical companies and from patients to prescribe medications regardless of diagnoses [10].

Whilst the majority of cases are viral, three-quarters of antibiotics consumed are for URTI, which has contributed to the emergence of drug-resistant bacterial pathogens, serious side-effects and waste of health care resources [11]. In the United States, hospital visit for colds, URTI

And bronchitis results in 40 million antibiotic prescriptions, accounting for 55% of all antibiotic prescriptions, at a cost of \$ 726 million [12].

The quality of medical care requires prescribing to be appropriate, safe, effective and economic. "Good" prescribing is a complex balance between various conflicting factors. The aim is to achieve clinical benefit with minimum risk at cost effective price while respecting the patient's choice [13]. This study was done in an attempt to analyze the current prescribing patterns of medications in the treatment of URTI. Findings of this study were expected to provide relevant and useful information related to use of medications in URTI to general practitioners and increase the scope of improvement in future.

Material and Method

The proposed study was observational, non-interventional and prospective in nature. Patients with URTI, >18 years of age and of either sex came to medicine OPD were included over a period of 3 months from November 2014 to January 2015 in this study. The study was conducted after getting approval from institutional ethics committee. All the relevant information like diagnosis of disease, drug's name, dose, route, duration of therapy, instructions, start/stop dates were recorded in annexure. Data obtained from the study were entered in MS Excel 2007 and analyzed.

Results

During period of three months in medicine OPD, Total 96 prescriptions of URTI with different symptoms (running nose, cough, sore throat, fever) were analyzed.

Out of total 96 prescriptions, major indication to prescribe was nonspecific URTI (50%) followed by others. [Table-I]

Table I: Different diagnosis of patients with URTI

Acute pharyngitis	10
Acute tonsillitis	19
Acute rhinitis	19
Nonspecific URTI	48

On analysis, we found that total 255 drugs were prescribed with average number of drugs per encounter were 2.65 in total 96 prescriptions. Total percentages of encounters with antibiotic prescribed

Were 47.91%. Total numbers of FDCs prescribed were 10.38%. [Table-II]

Table II: Prescribing pattern of drugs for URTI

Total no. of prescription	96
Total no. of drugs	255
Average number of drugs per encounter	2.65
% of encounter with antibiotic prescribed	47.91%
% of FDC prescribed	10.38%

There were total 3 FDCs prescribed, including terbutaline+ambroxol (62.50%), amoxicillin+clavulanic acid (33.34%) and ampicillin+cloxacillin (4.16%).

Total 255 drugs were prescribed for 96 patients, out of which, antihistamines (27%, cetirizine) were prescribed for maximum number of time, followed by demulcents (20.24%, linctus syrup), antibiotics (19.02%), NSAIDS (18.21 %, paracetamol), bronchodilator (6.07%, terbutaline), mucolytic (6.07%, ambroxol) and antacids (3.23%, anitidine). [Figure-I]

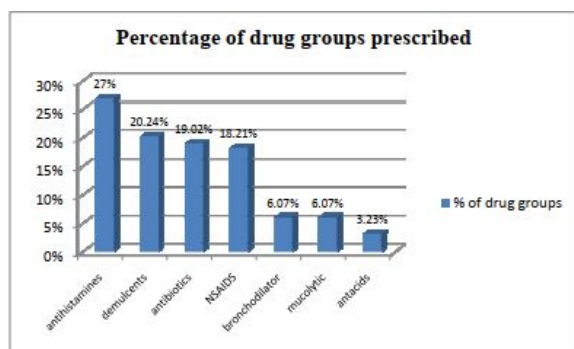


Figure-I: Different drug groups among prescribed drugs

Total 47 numbers of antibiotics were prescribed in 96 prescriptions, which were amoxicillin (28), amoxicillin+ clavulanic acid (9), azithromycin (9) and ampicillin+ cloxacillin (1). [Figure-II]

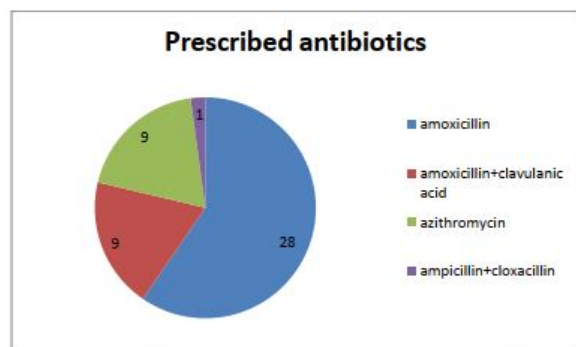


Figure II: Distribution of prescribed antibiotics

Discussion

The main principle of studying the prescribing pattern of medications for any disease is to justify their proper effective use without increasing drug resistance, non-compliance and cost of therapy to patients. Antibiotic resistance, due to over and inappropriate prescribing, is serious problem arising in the world.

URTI is the infection caused by both virus and bacteria. Many of the URTI do not require antibiotic therapy at all because of viral infection. The most common diagnosis in our study was non-specific URTI (due to common cold) and it is mainly due to viral infection which does not require any antibiotic therapy [14]

In total 96 prescriptions, total numbers of drugs prescribed were 255. Average numbers of drugs per encounter were 2.65 per prescription. In URTI, where symptomatic treatment is demanded more by patient himself, 2.65 drugs per encounter is not large number. It is positive sign of awareness among physician that overprescribing of drugs in cases of URTI will only lead to increase in cost of therapy, side effects, drug-drug interactions and decrease compliance of patients. In our study, total percentages of encounters with antibiotics were 47.91%, which was slightly on higher side. Higher prescribing of antibiotics for URTI (mostly self-limiting condition) will lead to increase in chances of antibiotic resistance, cost of therapy and adverse drug reactions to patients. Various controlled trials of anti-microbial treatment of the common cold have failed to show that antibiotic treatment changes the course of outcome, or has a preventive effect on lower respiratory tract infection [15]. In the antibiotic group, most prescribed antibiotic was amoxicillin (59.58%), followed by others. Amoxicillin is older generation and safer antibiotic to use. Higher percentage of prescribing such safer antibiotic by the physicians to the patients is encouraging sign in our study.

Total percentages of FDCs prescribed in our study were 10.38%. Prescribed FDCs were terbutaline+ambroxol, amoxicillin+clavulanic acid and ampicillin+cloxacillin. Out of these, amoxicillin+clavulanic acid is rational combination while rests of the two are irrational combinations. Combination of ampicillin+cloxacillin is irrational because ampicillin is mainly effective against gram -ve infection

While cloxacillin is useful against gram+ve infection. Such mixed infections are not possible in URTI cases [16]. One more prescribed combination terbutaline (bronchodilator) with ambroxol (mucolytic) is also irrational because the US-FDA has stopped marketing of all expectorants (mucolytics), except guaiphenesin. Steam inhalation and proper hydration may be more helpful in clearing airway mucus [17]. There are more than 90% of the preparations were fixed-dose combinations (FDCs) for cough and cold in Indian market. Rationality assessment of the FDC preparations revealed that most of the preparations were irrational and had no documented benefit in the treatment of common cold [5]. Use of such irrational combinations lead to increase cost of therapy, side effects and less efficacy of individual component due to reduction in dose of them. In availability of such a large number of irrational FDCs for cough and cold, prescribing less (6.92%, excluding amoxicillin+clavulanic acid) FDCs by physicians is encouraging. Most prescribed drug group in our study was antihistamines, cetirizine (27%). Main purpose of using such drug is symptomatic improvement but literatures supporting for prescribing antihistamines for use of common cold are very less in number [18, 19]. Demulcents and NSAIDs group of drugs were also prescribed with prescribing rates of 20.24% and 18.21%, respectively, for providing symptomatic improvement. Because the common cold is a self-limited disease, symptoms resolve within 1 week in most cases without any treatment. Even highly effective symptomatic treatments administered when cold symptoms are beginning to wane will have less of an effect than they would if given early in the illness [20]. Because patients are not feeling low in early phases of disease, they tend to come late to physicians for treatment. So higher numbers of prescribing such symptomatic treatments will only increase cost of therapy and helping less. After analyzing all prescriptions for URTI, we can say that using less number of drugs per encounter (no polypharmacy), higher use of safer antibiotics and less use of irrational FDCs are encouraging signs. Still total percentages of encounters with antibiotics were slightly on higher side. One of the reasons for this is patients themselves expecting of some medications from doctors to cure condition. So there is requirement for need of education for both the patients and doctors, regarding the limited contribution of medications to cure this self-limiting condition URTI.

Education for all medical professionals on more appropriate and cost effective way of prescribing is required to generate effective and rational prescribing. We can change this prescribing behavior by many effective interventions like prescription auditing, KAP (Knowledge, Attitude and Practicing) studies of physicians, conducting regular CMEs and generating proper guidelines for antibiotics and NSAID's prescribing. The benefits of the intervention studies will definitely going to help effective prescribing. Such rational prescribing messages should be promoted at local, national and international level to combat the threat of drug resistance.

Conclusion

Proper and effective prescribing pattern of medications, for any condition, is required to improve drug efficacy, decrease cost of therapy, adverse effects, drug-drug interaction and drug resistance. It is possible to achieve this by effective interventions like prescription audit, KAP studies, regular CMEs and following proper prescribing guidelines produced by regulatory bodies.

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