

THE DRUG UTILIZATION PATTERN OF ANTIMICROBIALS IN ENT OUTPATIENT DEPARTMENT IN A TERTIARY CARE HOSPITAL OF WESTERN RAJASTHANMohammad Haroon Gouri^{*1}, Rajkumar Rathore², Pratiksha Ladla¹, Monika Sharma³ and Archana Vyas³¹Resident, Department of Pharmacology, Dr. S.N. Medical College, Jodhpur.²Senior Professor, Department of Pharmacology, Dr. S.N. Medical College, Jodhpur.³Senior Demonstrator, Department of Pharmacology, Dr. S.N. Medical College, Jodhpur.***Corresponding Author: Mohammad Haroon Gouri**

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ABSTRACT

Background: Respiratory tract infections have high and frequent incidence and thus are among the most important human health problems. The antimicrobials are commonly used in ENT departments. Thus prescription-auditing involving the utilization patterns of antimicrobials should be done time to time to ensure their rational use. **Methods:** A prospective, cross-sectional, observational study was done for 6 months (Sept. 2019 to Feb. 2020) in the ENT OPD of MDM hospital, a tertiary care hospital associated with Dr. S. N. Medical College, Jodhpur for treatment of common ENT diseases. The data was analyzed in form of frequency and percentage. **Results:** Total 782 prescriptions were analyzed. Out of which, 417 were of male patients (53.32%) and 365 (46.67%) of female patients. All 3278 drugs prescribed were in their generic names and from list of essential medicines (100%) for state of Rajasthan. Average number of drugs per encounter were found to be 4.19. Antimicrobials (24.87%) were most commonly prescribed (including oral, topical and parenteral route), followed by NSAIDs (23.39%), antihistaminics (15.33%), vitamin supplements (12.80%), anti-ulcer drugs (9.58%), nasal decongestants (4.92%), corticosteroids (3.84%), antiseptics (1.00%) and others (4.22%). Most frequently used antimicrobials were cefixime (27.99%), followed by ciprofloxacin (24.59%), amoxicillin + clavulanic acid (24.22%), clotrimazole (11.96%) and neomycin (4.71%). Total number of antimicrobials prescribed in this study were 1061, out of which total number of antibiotics were 934 (88.03%) and antifungals prescribed were 127 (11.97%). **Conclusion:** Cefixime (27.99%), followed by ciprofloxacin (24.59%) were most frequently used antimicrobials in our study. The use of the generic name was found to be satisfactory, but the average number of drug per prescription was high. An antibiotic policy has to be developed for the doctors in treating infections so that rationality in using the antibiotics will be developed and the occurrence of antibiotic resistance can be reduced.

KEYWORDS: Antimicrobials, ENT, drug utilisation pattern.**INTRODUCTION**

Respiratory tract infections have high and frequent incidence and thus are among the most important human health problems.^[1] Upper respiratory tract infections (URTI) are commonest among them, and manifests as cough or cold, which are also known as the common cold, coryza, acute nasopharyngitis or acute pharyngorhinitis. The aforementioned URTIs and other ENT infections (eg. tonsillitis, otitis media etc.) are usually caused by the microorganisms viz. bacteria, fungi and viruses and thus the treatment involves the use of adequate antimicrobials along with concurrent supportive drug therapy.

The majority of acute URTIs are caused by viruses. Common cold is caused by viruses in most cases and does not require antimicrobial agent unless it is complicated by Acute Otitis Media (AOM) with effusion, tonsillitis, sinusitis and lower respiratory tract

infections. The cases of rhino-sinusitis are mostly viral and, therefore, resolve spontaneously without antimicrobial therapy.^[2] However, for other ENT infections several treatment regimens have been in use. Antimicrobials, anti-inflammatory drugs, sympathomimetic drugs, antihistaminics, mucolytics, expectorants and cough suppressants are prescribed generally, either individually or in combination. The supportive measures include soothing remedies (syrups and lozenges)^[3], saline nasal drops^[4], oral hydration and mist therapy⁵ and oral hot fluids.^[6]

In this context, use of antimicrobial drugs and other additional treatment therapy assumes importance and calls for caution and restraint. However, with the establishment of the efficacy of certain antimicrobials in ENT infections other than common cold, selection of appropriate antibiotics with or without certain supportive measures is made possible. The purpose of treatment of

ENT infections is to prevent complications and to ensure adequate health benefits with minimum adverse effects. Despite many years of use of antibiotics, less is known about how these drugs should be used optimally to minimize resistance development without compromising safety and efficacy. The International Network for the Rational Use of Drugs (INRUD) was established in 1989 to promote rational use of drugs in developing countries. WHO defines rational use of drugs that “patients receive drugs appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community.” In collaboration with WHO, various indicators were developed by INRUD that provided objective indices for assessment of drug use practices.^[7] The rampant use of antibacterials has led to massive drug resistance. A number of antibiotics are rendered useless due to this issue. The antibacterials are commonly used in ENT departments. Thus prescription-auditing involving the utilization patterns of antibacterials should be done time to time to ensure their rational use. Besides this, irrational use of medicines leads to increased incidence of treatment failure and economic burden on patient and the community as a whole.

MATERIALS AND METHODS

The study was conducted in the department of Pharmacology in collaboration with department of ENT (OPD) of MDM hospital, a tertiary care hospital associated with Dr. S. N. Medical College, Jodhpur, Rajasthan. It is a prospective, cross-sectional, observational and single centre study for duration of 12 months.

STUDY POPULATION

The study population included patients attending ENT OPD of MDM hospital, a tertiary care hospital associated with Dr. S. N. Medical College, Jodhpur for treatment of common ENT diseases.

DATA COLLECTION

Period of data collection was for a period of 6 months instead of 12 months, from Sept. 2019 to Feb. 2020. at ENT OPD of MDM hospital due to Covid pandemic.

STUDY METHOD: Prior permission was taken from Institutional Ethics Committee. The ENT OPD was visited regularly, appropriate patients were selected and enrolled according to inclusion and exclusion criteria.

Data was collected from patients’ prescriptions and recorded on a pre structured case reporting form. All the pharmacotherapeutic agents used during the treatment of patients, age of patients, gender distribution, types of infections were recorded in details. The dose of drugs, duration of treatment, frequency of administration and dosage form, were recorded in Case Record Form. Since our study was observational and non-interventional, no remarks were made on the diagnosis or management of the patient.

STATISTICAL ANALYSIS: Data were recorded on Microsoft excel sheet. Average number of antimicrobials and adjunctive drugs prescribed per patient and dosage form were calculated by using mean. Statistical tools were used wherever necessary. EPI-INFO version 7, which is a statistical software developed by Centres for Disease Control and Prevention(CDC) in Atlanta, Georgia (US) was used for statistical analysis.

Antimicrobial and adjunctive drug prescription pattern was analyzed as per following parameters:

- Name and group of the drugs prescribed
- Brand name/generic name of the drug
- Frequency of administration
- Route of administration
- Change done in therapy according to culture reports.

RESULTS

Total 782 prescriptions were included in this study, based on inclusion and exclusion criteria specified, to analyze drug prescription pattern in patients suffering from common ENT diseases. This study was conducted for a period of 6 months at ENT OPD of MDM hospital, associated with Dr. S. N. Medical College, a tertiary care teaching hospital, Jodhpur, Rajasthan.

1. FREQUENCY OF INDIVIDUAL ANTIMICROBIAL DRUG USED (N=1061)

In this study, total number of antimicrobial drugs prescribed were 1061. Most frequently used were cefixime (27.99%), followed by ciprofloxacin (24.59%), amoxicillin + clavulanic acid (24.22%), clotrimazole (11.96%) and neomycin (4.71%). Other less frequently prescribed were cefpodoxime, fusidic acid, azithromycin, cefuroxime, levofloxacin, metronidazole, framycetin, linezolid, doxycycline, ofloxacin, ceftriaxone, amikacin and piperacillin+ tazobactam.

Table 1: Frequency of Individual Antimicrobial Drug Used.

| NAME OF DRUG | NO. OF TIMES PRESCRIBED | PERCENTAGE |
|-------------------------------|-------------------------|------------|
| CEFIXIME | 297 | 27.99% |
| CIPROFLOXACIN | 261 | 24.59% |
| AMOXICILLIN + CLAVULANIC ACID | 257 | 24.22% |
| CLOTRIMAZOLE | 127 | 11.96% |
| NEOMYCIN | 50 | 4.71% |
| CEFPODOXIME | 15 | 1.41% |
| FUSIDIC ACID | 12 | 1.13% |
| AZITHROMYCIN | 11 | 1.03% |

| | | |
|--------------------------|---|-------|
| CEFUROXIME | 7 | 0.65% |
| LEVOFLOXACIN | 6 | 0.56% |
| METRONIDAZOLE | 6 | 0.56% |
| FRAMYCETIN | 4 | 0.37% |
| LINEZOLID | 3 | 0.28% |
| DOXYCYCLINE | 1 | 0.09% |
| OFLOXACIN | 1 | 0.09% |
| CEFTRIAZONE | 1 | 0.09% |
| AMIKACIN | 1 | 0.09% |
| PIPERACILLIN+ TAZOBACTAM | 1 | 0.09% |

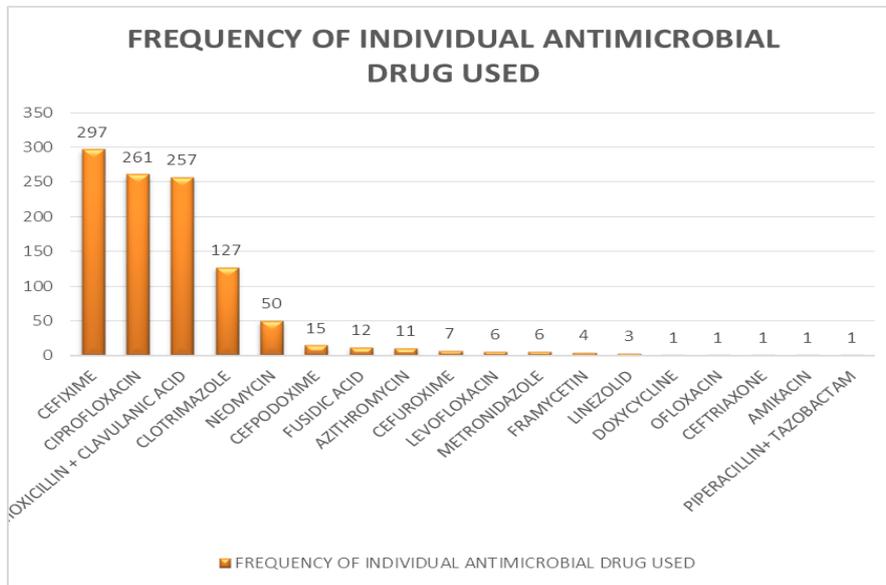


Figure 1: Frequency of Individual Antimicrobial Drug Used.

2. ROUTE OF ADMINISTRATION OF ANTIMICROBIALS USED (N=1061)

Among the 1061 antimicrobials prescribed, 636 were given by oral route (59.94%), 422 were used topically

(39.77%). Only 3 antibiotics (0.28%) were given intravenously.

Table 2: Route of Administration of Antimicrobials Used.

| ROUTE | NUMBER OF DRUGS | PERCENTAGE |
|-------------|-----------------|------------|
| ORAL | 636 | 59.94% |
| TOPICAL | 422 | 39.77% |
| INTRAVENOUS | 3 | 0.28% |

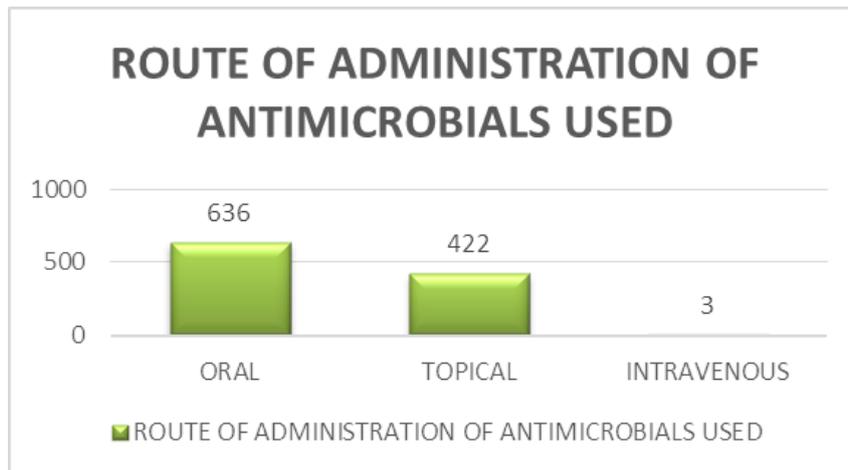


Figure 2: Route of Administration of Antimicrobials Used.

3. CULTURE AND SENSITIVITY PATTERN

In our study, laboratory investigations were not done frequently. Hence, antimicrobial therapy was empirical and based on clinical judgement. In this study, total 57 samples were sent for culture and sensitivity test. 7 sample were culture negative, 5 samples showed growth for candida which were sensitive for most antifungals

like nystatin, fluconazole, ketoconazole, amphotericin B, miconazole etc. 17 sample showed growth for Staph. aureus, 16 samples showed growth for Pseudomonas, 5 samples showed growth for E.coli, 4 samples showed growth for Proteus and 3 samples showed growth for Klebsiella.

Table 3: Culture and Sensitivity Pattern.

| Total Sample | Culture Negative | Culture Positive | | | | | |
|--------------|------------------|------------------|---------------|-------------|--------|---------|------------|
| | | Candida | Staph. aureus | Pseudomonas | E.coli | Proteus | Klebsiella |
| 57 | 07 | 05 | 17 | 16 | 05 | 04 | 03 |

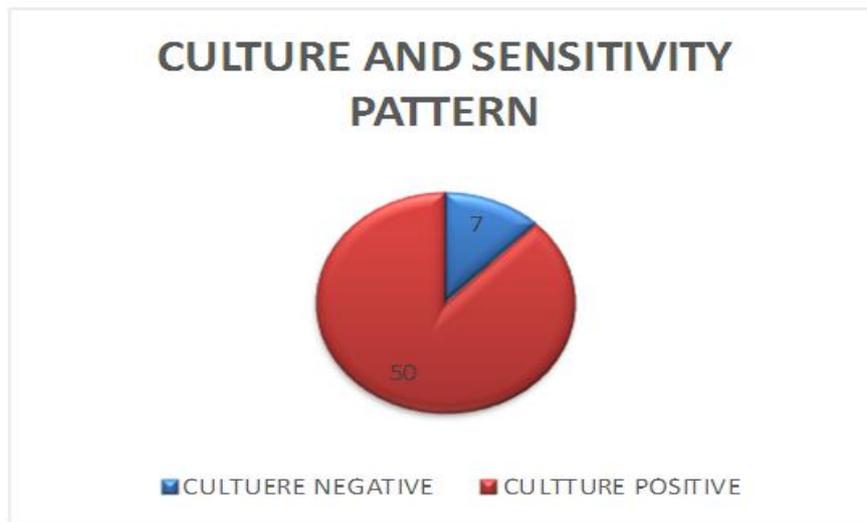


Figure 3: Culture and Sensitivity Pattern.

DISCUSSION

The treatment regimens prescribed highlight the use of commonly used antimicrobials along with well-known adjuncts such as antihistamines, NSAIDs, anti-ulcer drugs etc. The most preferred antimicrobial used is cefixime (27.99%), followed by ciprofloxacin (24.59%), amoxicillin + clavulanic acid (24.22%) and clotrimazole (11.96%). Generally single antibiotic was prescribed orally except when used with metronidazole. In this study, otomycosis is the only ENT infection where clotrimazole has been prescribed as an antifungal drug.

In this study, the most common antimicrobial prescribed was cefixime (27.99%) followed by ciprofloxacin (24.59%). A study conducted by Bhat GMN et al, study by Sumalatha R et al, have revealed that B Lactum (penicillins and cephalosporins) were the most commonly prescribed antimicrobials. 636 antibiotics were prescribed by oral route (59.94%) and 422 by topical route (39.77%).^[8,9] Most commonly used topical antibiotic was ciprofloxacin (54.26%). Patients having fungal infection were prescribed topical clotrimazole only.^[10]

In our study, laboratory investigations were not done frequently. Hence, antimicrobial therapy was empirical and based on clinical judgement. In this study, total 57

samples were sent for culture and sensitivity test. 7 sample were culture negative, 5 samples showed growth for candida which were sensitive for most antifungals like nystatin, fluconazole, ketoconazole, amphotericin B, miconazole etc. 17 sample showed growth for Staph. aureus, 16 samples showed growth for Pseudomonas, 5 samples showed growth for E.coli, 4 samples showed growth for Proteus and 3 samples showed growth for Klebsiella.

Amoxycillin+clavulanate and linezolid showed sensitivity for only 16 samples of Staph.aureus, cefixime showed sensitivity for total 7 samples of E.coli, Proteus and Klebsiella. Ofloxacin showed positive sensitivity for 16 samples of Staph. aureus and 12 total samples of gram negative bacteria, ciprofloxacin showed positive sensitivity for 12 samples of Staph. aureus and 11 total samples of gram negative bacteria.

In this context, it is also worth considering that most of the ENT infections are known to be acute and short lived in nature and onset, and as such their treatment would require for a brief period of time with a few exceptions where chronicity is observed.

Hence, the need for a follow-up in acute cases does not ordinarily arise, as the emphasis is on curative approach

with standard therapeutic regimens for a short period of time. However, in cases of chronicity, the compliance of patients in revisiting the hospital is an important factor for follow-up, which is not always predictable.

CONCLUSION

In conclusion, it is clear that good prescribing practices have prevailed in the hospital where this study was undertaken and the treatment protocols are in consensus with the general trend and guidelines, although the preference in the choice of established antimicrobials and adjuncts might suggest a slight change. Thus, the rationality in the usage of relevant antimicrobials with appropriate adjuncts is evident.

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