Study of drug use in outdoor pediatric patients of upper respiratory tract infections in a tertiary care hospital

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INTRODUCTION

The upper respiratory tract (URT) includes nose, the paranasal sinuses, adenoids, tonsils, nasopharynx and eustachian tube. URT infections (URTI’s) include common cold, laryngitis, pharyngitis/tonsillitis, acute rhinitis, acute rhinosinusitis and acute otitis media. The most common signs and symptoms observed in URTI are coughing and sneezing, congestion, runny nose, low-grade fever, anorexia, and myalgia. URTIs are amongst the leading cause of morbidity and the most frequent cause of health service access worldwide.

Common cold does not require antimicrobial agents unless it is complicated by acute otitis media with effusion, tonsillitis, sinusitis and lower respiratory tract infection. The management of URTI of viral origin involves symptomatic treatment like antihistamines, antipyretics or anti-inflammatory agents, cough suppressants (such as dextromethorphan), expectorants and decongestants. Antibiotic treatment is beneficial to children only if symptoms persist for 10-14 days without improvement. Hence it poses a challenge to the clinicians to differentiate between viral and bacterial origin of URTI. While many of these infections are caused by viruses, clinicians prescribe antibiotics for over half of the visits for these conditions.

In India, 69.4% of patients with uncomplicated acute respiratory infections were prescribed antibiotics. Antibiotic overprescribing is also evident in children with 74% of children with URTI in Canada and 46% of...
children with URTI in the United States receiving antibiotic prescription.18

Problems associated with the overuse of antibiotics include development of bacterial resistance, increasing the burden of chronic disease, raising the cost of health services and the development of side effects (e.g.: Adverse gastrointestinal effects).19

The following study was done to analyze the use of antibiotics and other drugs while prescribing for the treatment of URTI.

METHODS

This is a retrospective study of 5 months duration which was carried out from January 2015 to May 2015 in Pt. J.N.M. Medical College and associated Dr. B.R. Ambedkar Memorial Hospital, Raipur, Chhattisgarh. The data was obtained from the hospital records of patients who had visited the outpatient department of the pediatric of Dr. B.R. Ambedkar Memorial Hospital, Raipur. Permission was obtained from Institutional Ethical Committee.

Patients of either sex, up to the age of 14 years who were prescribed drugs for URTIs were included in the study. A total of 2256 records were analyzed. Data regarding demographics such as age, sex, drug details which include name of the drugs, dosage form, dose frequency and duration were recorded. Total number of drug used, average number of drug per prescription, the average number of antibiotic per prescription was calculated. The results were presented as mean and percentage.

RESULTS

A total of 2256 pediatric patients’ data were analyzed. In our study, patients were divided into four groups based on different age. Majority of the patients were from 1 to 5 years age group (49.02%) followed by 5-10 years age group (23.31%) and the least in 10-14 years age group (8.55%) (Table 1). 58.33% patients were male and 41.66% patients were female indicating that male patients were comparatively more than the number of female patients approaching for treatment (Table 2).

The total number of drugs prescribed was 6332. The average number of drugs per prescription was 2.81 (Table 3).

In our study, 1001 number of patients (44.37%) has received 3 drugs, followed by 2 drugs in 617 patients (27.34%) (Table 4 and Figure 1).

The total number of prescriptions containing antibiotic were 1341 (59.44%) as shown in Figure 2. Total number of antibiotics prescribed was 1341. The average number of antibiotics per prescription was 0.59.

In our study, 40.55% (n=915) patients received symptomatic treatment only. 59.44% patients (n=1341) received both antibiotic and symptomatic treatment.

The most frequently prescribed antibiotic was amoxicillin (70.91%), followed by cotrimoxazole (10.21%), cefixime (5.21%), amoxicillin, and clavulanic acid combination (4.62%), azithromycin (3.65%), ampicillin (2.98%), ofloxacin (1.34%), ciprofloxacin (0.89%) and levofloxacin (0.14%) (Figure 3).

Among all the drugs utilized for the treatment of URTI, antihistaminics and expectorants combinations were found

| Table 1: Age distribution of patients in our study (n=2256). |
|----------------------------------|-----------------|----------------|
| Age (in years)                  | Number of patients | Percentage |
| 0-1                             | 431              | 19.10        |
| 1-5                             | 1106             | 49.02        |
| 5-10                            | 526              | 23.31        |
| 10-14                           | 193              | 8.55         |

| Table 2: Sex distribution of patients in our study (n=2256). |
|----------------------------------|-----------------|----------------|
| Gender                          | Number of patients | Percentage |
| Male                            | 1316             | 58.33        |
| Female                          | 940              | 41.66        |

| Table 3: Prescription parameter. |
|----------------------------------|-----------------|----------------|
| Parameters                      | Numbers         |                |
| Total numbers of prescription analyzed | 2256          |                |
| Total number of drugs prescribed | 6332            |                |
| Average number of drugs per prescription | 2.81        |                |
| Total number of prescription containing antibiotics | 1341          |                |
| Total number of antibiotics prescribed | 1341         |                |
| Average number of antibiotics per prescription | 0.59         |                |
| Total number of FDC (antibiotics) prescribed | 195            |                |

FDC: Fixed dose combinations

| Table 4: Number of drugs prescribed per prescription. |
|----------------------------------|-----------------|----------------|
| Number of drugs per prescription | Number of prescription |
| 1 drug                           | 196              |                |
| 2 drug                           | 617              |                |
| 3 drug                           | 1001             |                |
| 4 drug                           | 341              |                |
| 5 drug                           | 74               |                |
| 6 drug                           | 24               |                |
| 7 drug                           | 03               |                |

In our study, 40.55% (n=915) patients received symptomatic treatment only. 59.44% patients (n=1341) received both antibiotic and symptomatic treatment.
to be the most common prescribed class of drug (29.34%) followed by analgesics and antipyretics (26.45%) as shown in Figure 4.

Regarding the route of drug administration, no drug was administered by the parenteral route. 97.66% of all the drugs were administered by oral route out of which syrup (68.22%) was the most common dosage form used, followed by tablets (28.95%) and lastly capsule (2.83%). Topical route of drug administration was employed only for 1.55% of the total drugs followed lastly by inhalational route (0.78%) (Figure 5).

**DISCUSSION**

In our study, the majority of the patients were <5 years age. The reason may be because they have less immunity and are more susceptible to infections. Sawalha et al., from an inpatient setting reported that 78% of the patients admitted with respiratory tract infection were <5 years in age.20

The male pediatric patients were comparatively more than the female pediatric patients. In our study, on an average 2.81 drugs were prescribed per patient. A similar study done by Thandu et al.21 and Das et al.22 found the mean number of drugs per prescription to be 3.55 and 2.37, respectively. The study also revealed that more than half of the patients were prescribed three or more drugs for the treatment of URTI. This may be because for the treatment of URTI a combination of analgesic, cough syrups, saline drops are prescribed with or without antibiotic.11

The study revealed that 59.44% of patients were prescribed antibiotics and amoxicillin (70.91%) was the most frequently prescribed antibiotic followed by cotrimoxazole (10.21%). The use of amoxicillin is a welcome step as newer antibiotics are expensive and their use must be restricted for cases of antibiotic resistance. A study by Mungrue et al.23 showed that amoxicillin (78.3%) was the most frequent antibiotic prescribed. Erythromycin (10.4%), amoxicillin and clavulanic acid (9.1%) were the other antibiotic used. Another study24 in India showed that the most common prescribed antibiotic was penicillin (28.6%) followed by a fluoroquinolone (19.5%).

In the present study, expectorants and antihistaminics combination were found to be the most common prescribed class of drug. No drug was given by parenteral route. Most common route of drug administration was the oral route of which syrup was the most common dosage form used. This may be because most of the children were below 5 years of age.

**CONCLUSION**

The study revealed that the majority of children were below 5 years of age. The most common class of drugs prescribed
was antihistaminics and expectorant combinations followed by analgesics and antipyretics. The study also revealed that while 59.44% of patients were prescribed antibiotics, only 21% of the total drug prescribed for the treatment of URTI was antibiotics. The study also revealed that 40.55% of all the patients were prescribed drug without any antibiotics. This strategy of combating URTI by symptomatic treatment without prescribing antibiotic must be encouraged. A strict guidelines must be laid down for prescribing antibiotic in case of URTI as mostly it is of viral origin. Correct diagnosis of the disease and its treatment constitutes important aspects of patients care which becomes even more important in the case of pediatric age group.

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