e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2024; 16(2); 393-396

Original Research Article

A Retrospective Study to Assess the APR in Paediatric Outpatient Department (OPD) for URTI Patients

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Received: 03-01-2024 / Revised: 22-01-2024 / Accepted: 26-02-2023
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Conflict of interest: Nil

Abstract

Aim: The present study was conducted to assess the APR in paediatric outpatient department (OPD) for URTI patients with respect to available benchmark and to decide on interventions required to improve the prescription behaviour.

Material & Methods: This was a retrospective study in the Department of Pharmacology, Anugrah Narayan Magadh Medical College and Hospital Gaya, Bihar, India from September 2019 to July 2021. The prescriptions of children diagnosed with upper respiratory tract infections and lower respiratory tract infections (LRTI) were screened. Their demographic profile and details of drugs prescribed were recorded. Total 200 patients were included in the study.

Results: Out of 200 patients, boys were 90 and girls were 110. Age group 5-7 years had 32, 7-9 years had 38, 9-11 years had 72 and 11- 13 years had 58 children. Antibiotics prescribed in children were co-amoxiclav in 70, amoxycillin in 58, Ofloxacin in 42 and cefuroxime in 30. The difference was significant (P> 0.05).

Conclusion: URTI was treated using single antimicrobial whereas LRTI was treated with more than one antimicrobials or combination of antimicrobial and antiviral agent. The prescriptions were in accordance with the national treatment guidelines.

Keywords: Antibiotics, children, upper respiratory tract infection.

Introduction

Acute respiratory tract infection (ARTI) is the most common reason for antibiotic prescription in children and adults. Antimicrobial agents are often prescribed in the paediatric population for treating various infections. The accurate determination of safety and efficacy of any drug being prescribed to a child is rather different from adults as it is dependent on understanding pharmacokinetics and pharmacodynamics of a particular drug, as well as the clinical characteristics of the child being treated with that particular drug. [1] The benefits of antibiotics for the management of most cases of ARTI such as sore throat are marginal. Inappropriate prescribing of antibiotics for patients with mainly URTI is common. [2]

Upper respiratory tract infections include rhinitis (common cold), sinusitis, ear infections, acute pharyngitis or tonsillopharyngitis, epiglottitis and laryngitis. Most of the URTIs have a viral aetiology but these may predispose the children for bacterial infections also. Amongst above URTIs, ear infections may cause deafness while pharyngitis due to group A beta haemolytic streptococci may be responsible for rheumatic fever as a serious complication. LRTIs include epiglottitis, laryngitis, laryngotracheitis, bronchitis, bronchiolitis and pneumonia. [2-4] Rhinoviruses, respiratory syncytial viruses (RSV), and influenzas viruses, human metapneumovirus and adenoviruses are common causative viruses for ARTI. Amongst this, Rhinovirus account for 25-30% acute URTIs and coronavirus for 10%, while other viruses account for 25-35%. According to WHO, in developing countries, ARTI caused by RSV is responsible for almost 6 lakhs deaths per year. [5]

A well- known method for reducing antibiotic prescriptions for ARTI is the use of delayed prescriptions. [6] These are valid prescriptions issued at the time of the consultation. The PCP usually negotiates with the patient that they are not to be used immediately but only if the patient feels that their symptoms deteriorate or do not improve as

expected. [7] There is evidence of irrational prescription of antibiotics in febrile children [8], especially with respiratory tract infections (RTIs).8 In low and middle-income countries (LMICs), high levels of antimicrobial resistance correlate with the high number of antibiotics prescribed in children with fever. Globally, the prevalence of antibiotic prescription is 32%. [9] Children suffering from viral infections or non-infectious diseases receive antibiotics frequently. [10] Antibiotic stewardship programs for paediatric patients are implemented across developed and developing countries to curb the burgeoning antibiotic resistance crisis. [11,12]

The present study was conducted to assess antibiotic usage in upper respiratory tract infections in children.

Material & Methods

This was a retrospective study initiated in the Department of Pharmacology, Anugrah Narayan Magadh Medical College and Hospital Gaya, Bihar, India from September 2019 to July 2021. The prescriptions of children diagnosed with upper respiratory tract infections and lower respiratory tract infections (LRTI) were screened. Their demographic profile and details of drugs prescribed were recorded. Total 200 patients were included in the study.

Written informed consent from the parent of each child who met the inclusion criteria was taken after explaining the purpose of the study and before screening their prescriptions. Assent was obtained from the children between 12 to less than 18 years of age along with their parents' written informed consent.

Inclusion Criteria:

Paediatric patients diagnosed with respiratory tract infection having age more than 2 and less than 18 years attending paediatric outpatient department (OPD) or admitted in paediatric ward or paediatric intensive care unit.

Exclusion Criteria

Children suffering from malaria, tuberculosis, HIV/AIDS or other immunodeficiency diseases, congenital heart diseases, and cancer, necessitating long-term antibiotic treatment or prophylaxis, were excluded.

The demographic details of each selected paediatric patient, diagnosis, and details of drugs prescribed such as, name of the drug, generic or brand name, its strength/dose, route of administration, frequency of use, average number of drugs per prescription, number of fixed dose combinations (FDCs), and duration of treatment were recorded in the case record form.

Statistical Analysis

The data was analysed with the help of statistical software SPSS, version 22 for windows. Descriptive statistic was used and the collected data was expressed in terms of numbers and percentages

Results

Table 1: Demographic details

Gender	Number	%
Boys	90	45
Girls	110	55
Age group (years)		
5-7	32	16
7-9	38	19
9-11	72	36
11-13	58	29

Out of 200 patients, boys were 90 and girls were 110. Age group 5-7 years had 32, 7-9 years had 38, 9-11 years had 72 and 11- 13 years had 58 children.

Table 2: Type of antibiotic used

Antibiotic used	Number	P value
Co-amoxiclav	70	0.10
Amoxycillin	58	
Ofloxacin	42	
Cefuroxime	30	

Antibiotics prescribed in children were co-amoxiclav in 70, amoxycillin in 58, Ofloxacin in 42 and cefuroxime in 30. The difference was significant (P> 0.05).

Discussion

Acute respiratory tract infection (ARTI) is the most common reason for antibiotic prescription in children and adults. The benefit of antibiotics for the management of most cases of ARTI such as sore throat is marginal. Inappropriate prescribing of antibiotics for patients with mainly URTI is common.[2] It is calculated that 75% of overall antibiotic prescribing takes place in primary care. Many medical practitioners do not think that antibiotic prescription in children is responsible for the development of antibiotic resistance where acute cough can last from 9 to 18 days while public expectation is for a duration of 7–9 days. [13] Antibiotic use is associated with increased risk of isolation of antibiotic-resistant organisms. Prescription behaviour of general practitioners and over-the-counter dispensing of medicines by pharmacists often mimic that of the specialists. Therefore, it becomes necessary that prime institutions lead the way in prescription behaviour. [14] Antibiotic use is associated with increased risk of isolation of antibiotic resistant organisms. [15] Prescription behaviour of general practitioners and over the counter dispensing of medicines by pharmacists often mimic that of the specialists. [16] Therefore, it becomes necessary that prime institutions lead the way in prescription behaviour.

Out of 200 patients, boys were 90 and girls were 110. Age group 5-7 years had 32, 7-9 years had 38, 9-11 years had 72 and 11- 13 years had 58 children. Antibiotics prescribed in children were co-amoxiclav in 70, amoxycillin in 58, ofloxacin in 42 and cefuroxime in 30. The difference was significant (P> 0.05). Connor et al [17] reviewed the published literature pertaining to antibiotic prescribing in order to identify and understand the factors that affect primary care providers' prescribing decisions. Primary care providers are highly influenced to prescribe by patient expectation for antibiotics, clinical uncertainty and workload induced time pressures. Strategies proven to reduce such inappropriate prescribing include appropriately aimed multifaceted educational interventions for primary care providers, mass media educational campaigns aimed at healthcare professionals and the public, use of good communication skills in the consultation, use of delayed prescriptions especially when accompanied by written information, point of care testing and, probably, longer less pressurised consultations. Delayed prescriptions also facilitate focused personalised patient education.

In a point-prevalence study, TMP-SMZ was the most prescribed antibiotic in Japan. [18] In another study in India, aminoglycosides and third-generation cephalosporins were most used for respiratory infections and acute febrile illnesses. [19] The evidence confirms that antimicrobial stewardship needs to be followed appropriately in the OPD setting. In this study, the most common reason for antibiotic prescription was presumed enteric fever (in 45 out of 46 children (97.8%)). Due to the emergence of extremely drug-resistant (XDR) typhoid, with sensitivity to only azithromycin and meropenem, there is a shift in antibiotic prescription trends. [20] The DESCARTE study has been looking at the symptomatic outcome of acute sore throat in a random sample of 2876 adults according to antibiotic prescription strategy in routine care. It concludes that in the routine care of adults with sore throat, a delayed antibiotic strategy confers similar symptomatic benefits to immediate antibiotics. [21]

Conclusion

The most commonly antibiotic prescribed in children were co-amoxiclav, amoxycillin, Ofloxacin and cefuroxime. URTI was treated using single antimicrobial whereas LRTI was treated with more than one antimicrobials or combination of antimicrobial and antiviral agent. The prescriptions were in accordance with the national treatment guidelines.

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