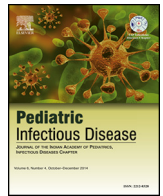




Contents lists available at ScienceDirect

Pediatric Infectious Disease

journal homepage: www.elsevier.com/locate/pid



Original Article

Impact of antibiotic stewardship strategy on the outcome of non-critical hospitalized children with suspected viral infection

Snehal Patel, Halak Vasavada*, Panchsila Damor, Vishesh Parmar

Pediatrics, Shardaben Hospital, NHL Medical College, Ahmedabad, India

ARTICLE INFO

Article history:
Received 25 March 2016
Accepted 19 June 2016
Available online xxx

Keywords:
Viral fever
Antibiotic abuse
Antibiotic resistance
Antibiotic stewardship program

ABSTRACT

Background: Viral fever is very common even among hospitalized patients in paediatrics. Often, antibiotics are unnecessarily prescribed leading to antibiotic misuse. In non-critical children, it is prudent to wait for clinical pattern to emerge before starting antibiotics even in hospitalized patients. **Aim:** To study the clinical outcome in non-critical hospitalized children with suspected viral infections and to study the impact of antibiotic stewardship program in the institute.

Method: It was a prospective observational study carried out from November 2014 to August 2015 in the paediatric ward of Shardaben hospital affiliated to NHL Medical College. All non-critical hospitalized children with suspected viral infections fulfilling pre-defined criteria were included in the study. Patients with prolonged fever >7 days duration were excluded. The clinical course in ward of these patients was noted along with signs of improvement/deterioration. The antibiotic usage in ward over a period of 3 years before and after the implementation of antibiotic stewardship program was compared. **Results:** Of all admitted patients, 1760 (56%) had suspected viral infection not requiring antibiotics on admission. Maximum patients were in 1–5 year age group. 4.6% turned out to be nonviral–bacterial infection/malaria and they required specific treatment. 56% of the study population required 1–3 days hospitalization. None of the patients required PICU admission and there was no mortality. The antibiotic usage reduced from 3.9 vials/admission to 2.36 vials/admission from 2011–12 to 2014–15.

Conclusion: Fever due to viral infections is very common even among non-critical hospitalized children. It is prudent to wait before starting antibiotics in such patients – it does not worsen the outcome. This study generates evidence for rational use of antimicrobials in paediatric practice. A protocol based 'Antibiotic Stewardship Program' can help in rationalizing antibiotic usage in selected group of patients. © 2016 Published by Elsevier B.V. on behalf of Indian Academy of Pediatrics, Infectious Disease Chapter.

1. Introduction

Fever is the one of the commonest ailments for which parents seek doctor's advice and is the commonest cause of hospitalization in children.^{1,2}

Fever is not a disease in itself but is an indication of an underlying cause, most commonly an infection. Such an infection could be viral, bacterial or parasitic, commonest in children being viral. Common viral infections are usually self-limiting and fever usually subsides on its own in a few days, till that time one has to use general measures only to control fever.

Specific antimicrobial therapy should be given only when there exists at least a provisional etiological diagnosis³ – the basis of the concept of 'Evidence Based Medicine'.^{4,5} But antibiotics are often prescribed without proper diagnosis, more so in hospitalized children under the wrong excuse of

- 1) Misconception of probable bacterial infection.
- 2) Prevention of bacterial super infection.
- 3) Fear of worsening of clinical condition.
- 4) For the false craze of an early recovery.
- 5) Succumb to parental pressure.

In absence of risk factors in a febrile child, it is rational to wait and observe progress without antibiotic therapy. Periodic clinical examination is necessary over a few days to pick up any clues to diagnosis, impending complication or any improvement or worsening of illness. Every attempt must be made to differentiate

* Corresponding author at: 96, Shardanagar Society, Vikas Gruh Road, Paldi, Ahmedabad 380007, India.
E-mail address: halakvasavada@yahoo.com (H. Vasavada).

<http://dx.doi.org/10.1016/j.pid.2016.06.015>

2212-8328/© 2016 Published by Elsevier B.V. on behalf of Indian Academy of Pediatrics, Infectious Disease Chapter.

bacterial infection from viral infection,⁶ let the bacterial infection localize (which takes about 2–3 days), so that we can know which organism is probably involved and which antibiotic needs to be used. It is vital to arrive at a provisional working diagnosis based on clinical analysis of detailed history and focused physical examination.

The chief cause of rise of antimicrobial resistance in today's era is the irrational use of antimicrobials and the key intervention to prevent antimicrobial resistance is rational use of antimicrobials both in office practice and in hospitalized children.^{7,8}

The published data in India regarding the rational use of antimicrobials especially in hospitalized children is almost non-existent. Hence this study was undertaken to underline the importance of rational use of antimicrobials in hospitalized non-critical children.

2. Aim

1. To know the percentage of clinically suspected viral infection in non-critical hospitalized children.
2. To study the clinical course/improvement/deterioration of viral infections in non-critical hospitalized children without the use of antimicrobials.
3. To study the impact of antibiotic stewardship strategy in reducing the antibiotic usage in paediatric general ward.

3. Method

This was a prospective observational study carried out in the paediatric ward of Shardaben Hospital affiliated to NHL Medical College, Ahmedabad. The study period was: November 2014 to August 2015 (10 months).

3.1. Inclusion criteria

Non-critical children with clinically suspected viral infections between age group of 3 months and 12 years admitted in the paediatric ward for associated morbidity like vomiting, fever, loss of appetite, etc. during the study period were enrolled in the study.

3.1.1. Criteria for non-critical children

History	Examination
No altered behaviour/sensorium	No disproportionate rise in heart rate and respiratory rate (age wise)
Normal urine output	Normal capillary refill time
No history of convulsions except febrile convulsion	No purpuric skin lesions
No bleeding from any site	No differential body temperature
	No chest retractions
	No meningeal signs
	No membrane in throat
	Maintaining SpO ₂ > 95% without oxygen

Out of all admissions, patients with all of the above criteria were considered as non-critical children and included in the study.

3.1.2. Criteria for viral infection

Fever	Bacterial	Viral	Malarial
Degree at onset	Moderate	High	High
Rhythm	Regular	Regular	Irregular
Response to paracetamol	Poor	Fair	Fair
Inter febrile state	Sick	Normal	Normal
Extent of disease	Localized	Generalized	–

Out of all non-critical admissions, patients matching with any 2 or more of the above criteria were considered as clinically

suspected viral infections and were enrolled in the study and rest were excluded.

3.2. Exclusion criteria

- Children with long duration of fever (fever for more than 7 days) were excluded.
- Those children with obvious diagnosis of acute infective viral hepatitis (jaundice), measles, mumps and chicken pox and those admitted as diagnosed bacterial infection, e.g. UTI, enteric fever, malaria and suspected bacterial infection were excluded.

After taking consent from parents, all the details with demographic profile, presenting complaints, detailed history, clinical features were recorded as per pre-tested proforma. The patient's progress in ward was closely monitored for improvement or deterioration or localization as bacterial infection. Clinical improvement was considered as decrease in intensity, frequency and duration of fever, subjective well-being and improved appetite. Daily detailed physical examination was performed by an expert paediatrician and necessary investigations were sent as and when required.

All these patients, as a part of Antibiotic Stewardship Program (ASP), with clinically suspected viral infection, were treated as per institute's protocol without the use of antimicrobials on admission and eventually were discharged with a final diagnosis. The core strategy in ASP (started on 26th September 2013) was prior approval and formulary restriction – antimicrobials were restricted and required approval from the ASP before they could be used. Guidelines were formed for antimicrobial usage and order forms justifying use of antibiotics in particular patient were required. The usage of antimicrobials during the study period was compared with the last 4 years' usage of antimicrobials in the same paediatric ward. The data was entered in an Excel sheet and analyzed using appropriate software.

4. Results

A total of 1760 patients were included in the study based on inclusion and exclusion criteria.

Out of the total 3143 patients hospitalized during the study period, 1760 (56%) had suspected viral infection not requiring antibiotics on admission (Fig. 1; Tables 1–3).

Rate of usage was 3.9 vials/patient in 2011–12 and 2.36 vials/patient in 2014–15 showing a 40% reduction over a period of 4 years (Fig. 2).

5. Discussion

One of the commonest complaints for which parents seek doctor's advice is fever.^{1,2} Overwhelming majority of short duration fever in children lasting for 5–7 days are due to viral infections. Hence in a non-toxic child with clinically viral fever one may merely observe. Being weapons of importance, antibiotics should be used with all the care and caution.

During the study period of 10 months, more than half of the admitted patients (1760 patients out of 3143, 56%) were suspected to be infections due to a viral aetiology. In a study by Colvin et al. it was found that one or more viruses were detected in 76% of 75 children with fever without an apparent source.⁹

In the present study, higher incidence of viral infections was found in 1–5 years age group (58%) which could be attributed to increased exposure to surroundings and viral infections from the society.

Download English Version:

<https://daneshyari.com/en/article/8742062>

Download Persian Version:

<https://daneshyari.com/article/8742062>

[Daneshyari.com](https://daneshyari.com)