Original Article

Effect of Cefixime in Typhoid

Efficacy of Cefixime in the Treatment of Uncomplicated Typhoid

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ABSTRACT

Objective: To determine the efficacy of cefixime in the treatment of uncomplicated typhoid fever in children.
Study Design: It was a descriptive case series.
Place and Duration of Study: this study was carried out at the Department of Pediatrics, Teaching Hospital D.G Khan Medical College from April 2013 to September 2013.
Materials and Methods: A total of 110 cases fulfilling the inclusion/exclusion criteria were enrolled in the study.
Results: In this study 8.78±3.87 years was the commonest age, 68(61.82%) male cases and 42(38.18%) female cases, efficacy of cefixime in the treatment of typhoid fever in children was calculated and in 96(87.27%) cases, efficacy was recorded while only 14(12.73%) cases could not treated effectively. The results of the study reveal that cefixime is safe and effective drug for the treatment of typhoid fever in children.
Conclusion: The results of the study reveal that cefixime is safe and effective drug for the treatment of typhoid fever in children.
Key Words: Typhoid Fever, Cefixime, Children

INTRODUCTION

In 1948 John Woodward successfully used chloramphenicol to treat patients with typhoid fever (TF). After this accomplishment, the first choice for the therapy of TF was chloramphenicol until the 1970s, when the first outbreaks of infection by antibiotic-resistant bacteria appeared. The loss of sensitivity by Salmonella typhi to the antibiotics used for the treatment of typhoid fever was noted in the years following the beginning of antimicrobial therapy. Resistant strains frequently are resistant to chloramphenicol, trimethoprim-sulfamethoxasole and ampicillin. Resistance to these drugs is called multi-drug resistance (MDR). In places with high incidence of MDR strains of Salmonella typhi, quinolones like ciprofloxacin are the chosen agents for the treatment of TF[1].

In 2006, the World Health Organization (WHO) estimated incidence of 16 to 33 million typhoid fever cases globally every year, with 500,000 to 600,000 deaths and case fatality rate of between 1.5 and 3.8%.[2] With more than 80% of global cases, South Asia is the most commonly reported region for the acquisition of typhoid fever since 1996 to 2005. There are several hospital based studies carried out in Pakistan that described high incidence rate of typhoid fever in children. According to an estimate, 250,000 deaths occur each year in Pakistan among which typhoid fever is one of the leading cause[3].

Pakistan is one of the 6 countries with 80% resistance to these drugs. The emrgence of developing MDR to ampicillin, chloromphenicol and trimethoprim-sulfamethaxazole leads to use of other druge like ciprofloxacin, ceftriaxone, and azithromycin. Flouroquinolones or third generation cephalosporins are the drugs of choice for the treatment of typhoid fever [4,5,7]. In recent years, however, the emergence of resistance to quinolones has placed tremendous pressure on public health system in developing countries as treatment options are limited [6,7].

Widespread emergence of multidrug-resistant S. typhi has necessitated the search for therapeutic options for TF. Fluoroquinolones have proven effective, but to date they are not recommended for use in children, and quinolone resistant strains of S. typhi have been reported[8].

Azalides are another class of antibiotics which have shown promise in the treatment of typhoid fever. Studies comparing the efficacy of Azithromycin with cefixime in adults and in children with typhoid fever have reported it to be safe and efficacious[9].

Only cefixime allow oral administration for use in ambulatory patients. Cefixime is a third generation cephalosporin, for oral use in children, administered once or twice daily with good antimicrobial activity against S. typhi. Due to emergence of multi-drug resistance (MDR) S. typhi alternative drugs for the treatment of TF are required. We conducted this study to assess the efficacy of Cefixime in the treatment of TF.

The emergence of multidrug resistance in Pakistan as well as in other countries leads to use of other antimicrobial agents. So, this study is designed to assess the efficacy of cefixime in their treatment of typhoid fever in children and will help in the better selection of

drugs in the treatment of enteric fever in children. The low cost of this drug and its single dose per day is going to be very economical for the patients.

MATERIALS AND METHODS

A total of 110 children, who were diagnosed as typhoid fever on the basis of their clinical presentation of febrile illness supported by positive typhoid IgM, between 3 to 15 years of age of either gender were included in the study while patients of typhoid fever who developed complications of the disease were excluded from the study. Informed consent was taken from the parents of the children and they were explained in detail regarding treatment procedure. All patients were given cefixime in single dosage of 20mg/kg/day. Patients were admitted and examined daily by the researcher and efficacy to treatment was noted. Efficacy of treatment was established (complete resolution of fever (98.6F) within 96 hours of treatment and patients remain a febrile for next 48 hours). The data was collected on a pre-designed proforma. Effect modifier (duration of fever before treatment) were addressed through stratification.

The data was entered in the SPSS version 12.0 and analyzed accordingly. Age was presented as mean and standard deviation. Gender and efficacy of treatment was presented as frequency and percentages. Data was stratified for duration of fever (<2, >5 days) before treatment.

RESULTS

Age distribution of the patients was done, 29(26.36%) were recorded between 3-5 years, 65(59.09%) were between 6-10 years and 16(14.55%) were between 11-15 years of age and 8.78+3.87 was recorded as mean and s.d.(Table 1). Gender distribution of the patients shows 68(61.82%) male cases and 42(38.18%) female cases (Table 2). Efficacy of cefixime in the treatment of typhoid fever in children was calculated and in 96(87.27%) cases, efficacy was recorded while only 14(12.73%) cases could not be treated effectively (Table 3).

Table No.1: Age Distribution (n=110)

Age(years)	n	%
3-5	29	26.36
6-10	65	59.09
11-15	16	14.55

Table No.2: Gender Distribution of the Patients (n=110)

Gender	n	%
Male	68	61.82
Female	42	38.18

Stratification of efficacy of cefixime in treatment of typhoid fever in children with regards to duration of fever reveals that 77(70%) cases were suffering from fever >5 days before treatment and out of them 69(89.61%) were treated effectively while <2 days of duration of fever before treatment was recorded in 33(30%) cases and out of them 27(81.82%) cases were treated effectively (Table 4).

Table No.3: Efficacy of Cefixime in the Treatment of Typhoid Fever In Children (n=110)

Efficacy	n	%
Yes	96	87.27
No	14	12.73

Table No.4: Stratification of Efficacy of Cefixime in the Treatment of Typhoid Fever In Children with Regards to Duration of Fever (n=110)

Duration of fever before treatment	No. of cases	%	Efficacy	
			No. of cases	%
>5 days	77	70	69/77	89.61
<2 days	33	30	27/33	81.82

DISCUSSION

The emergence of multi drug resistance in Pakistan as well as in other countries leads to use of other antimicrobial agents. This study was designed to assess the efficacy of cefixime and will help in the better selection of drugs in the treatment of enteric fever in children. The low cost of this drug and its single dose per day is going to be very economical for the patients.

For many decades, antibiotics such as chloramphenicol, ampicillin, and cotrimoxazole were used for treating enteric fever. The emergence of multiple-drug-resistant (MDR) Salmonella strains, which are resistant to chloramphenicol, ampicillin, and cotrimoxazole, have changed treatment options. MDR strains of S. Typhi have been reported from all parts of the world[10].

In one study, cefixime accomplishes the desired characteristics of an antibiotic and may be the treatment of choice of MDR and non-MDR typhoid fever, particularly in children from endemic areas with high prevalence of MDR typhoid fever. In that study, cefixime showed clinical efficacy around 100%, with low-rate of relapses. All strains isolated were sensitive to cefixime[11].

To date, the Fluoroquinolones are the agents of choice for the treatment of TF. However, the role of these agents in the pediatric patient is controversial, as they can cause damage to the articular cartilage[12]. In another study, cefexime accomplishes the desired characteristics of antibiotics and may be the treatment of TF, particularly in children and all age groups. In that study Cefixime showed clinical efficacy around 92.5% [13].

Ciprofloxacin and ofloxacin resistance was first reported in Bangladesh in 8% of enteric fever cases in the year 2000 [14]. In the year 2005 a resistance pattern of 71% was observed. In year 2009 the scenario was that of 90% resistance to second generation fluroquinolones cases[14,15,16,17]. Ciprofloxacin is no

more a drug for empirical therapy for the treatment of enteric fever in almost all countries of the world unless a complete ciprofloxacin susceptibility is proved [18,19]. However WHO recommends ciprofloxacin and ofloxacin for MDR cases and azithromycin, third generation cephalosporin and high dose older generation fluroquinolones in nalidixic acid resistant cases [17,20,21]. Resistance to azithromycin and Cefixime is rarely reported and this is why they can be used as empirical therapy in enteric fever [22,23].

The limitation of the study was that we did not compare cefixime with any other antibiotics and any side effects of the drug but considering the other studies mentioned above, we may consider cefixime as a safe drug and further trials may be conducted for comparison with other antibiotics as well. However, the low cost of this drug and its single dose per day is going to be very economical for the patients in our setup.

CONCLUSION

The results of the study reveal that cefixime is safe and effective drug for the treatment of typhoid fever in children.

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