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Original Research Article

A Comparative Analysis of Efficacy of Various Antibiotic Therapies for Treating Typhoid Patients

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ABSTRACT

Background: The present study was conducted to assess the efficacy of various antibiotic therapies in treating typhoid.

Materials & Methods: A total of 60 patients with presence of typhoid fever were enrolled. Complete demographic and clinical details of all the patients were obtained. All the patients were divided into three study groups as follows: Group A- Cefixime group, Group B- Azithromycin group and Group C- Chloramphenicol group. Clinical efficacy of all the three antibiotics was evaluated. All the results were recorded and analyzed using SPSS software. ANOVA test was used for evaluation of level of significance.

Results: Mean age of the patients was 42.3 years, 43.9 years and 45.1 years respectively. Majority proportion of patients of all the three study groups were males. Among patients of group A, group B and group C, antibiotics were effective in 90 percent, 93.33 percent and 93.33 percent of the patients respectively.

Conclusion: All the three antibiotics were equally effective among typhoid fever patients.

Key words: Asymptomatic bacteriuria, Diabetes.

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INTRODUCTION

Although advances in public health and hygiene have led to the virtual disappearance of enteric fever (more commonly termed typhoid fever) from much of the developed world, the disease remains endemic in many developing countries. Typhoid fever is caused by Salmonella enterica serovar Typhi (S typhi), a Gram-negative bacterium. A similar but often less severe disease is caused by S paratyphi A and, less commonly, by S paratyphi B (Schotmulleri) and S paratyphi C (Hirschfeldii). The common mode of infection is by ingestion of an infecting dose of the organism, usually through contaminated water or food. Although the source of infection may vary, person to person transmission through poor hygiene and sewage contamination of water supply are the most important.[1-3]

The prognosis for a patient with enteric fever depends on the rapidity of diagnosis and treatment with an appropriate antibiotic. Other factors include the patient's age, general state of health, and nutrition; the causative Salmonella serotype; and the appearance of complications. Infants and children with underlying malnutrition and those infected with multidrug resistant isolates are at higher risk of adverse outcomes. Although additional treatment with dexamethasone (3 mg / kg for the initial dose, followed by 1 mg/kg every 6 hours for 48 hours) has been recommended among severely ill patients with shock, obtundation, stupor, or coma, this must be done only under strictly controlled conditions and supervision, and signs of abdominal complications may be masked.[4-6] Hence; the present study was conducted for assessing the efficacy of various antibiotic therapies in treating typhoid.

MATERIALS & METHODS

The present study was conducted in the Department of General Medicine, Krishna Mohan Medical College and Hospital, Mathura, Uttar Pradesh (India) for assessing the efficacy of various antibiotic therapies in treating typhoid. A total of 60 patients with presence of typhoid fever were enrolled. Complete demographic and clinical details of all the patients were obtained. All the patients were divided into three study groups as follows: Group A- Cefixime group, Group B- Azithromycin group and Group C- Chloramphenicol group. Clinical efficacy of all the three antibiotics was evaluated. All the results were recorded and analyzed using SPSS software. ANOVA test was used for evaluation of level of significance.

Table 1: Age group

Groups	Mean	SD
Group A	42.3	5.8
Group B	43.9	5.1
Group C	45.1	5.3

Table 2: Clinical efficacy

Groups	Effective (n)	Effective (n)
Group A	27	90
Group B	28	93.33
Group C	28	93.33

RESULTS

A total of 60 patients with presence of typhoid fever were enrolled. Complete demographic and clinical details of all the patients were obtained. All the patients were divided into three study groups as follows: Group A- Cefixime group, Group B- Azithromycin group and Group C- Chloramphenicol group. The mean age of the patients was 42.3 years, 43.9 years and 45.1 years respectively. Majority proportion of patients of all the three study groups were males. Among patients of group A, group B and group C, antibiotics were effective in 90 percent, 93.33 percent and 93.33 percent of the patients respectively.

DISCUSSION

Typhoid fever is an infectious disease of global distribution. Although there is a wealth of data on Salmonella typhimurium infection in the mouse and the interaction of this serovar with human cell lines in vitro, there is a relatively small amount of data on S. typhi and the pathogenesis of typhoid fever. Typhoid fever is estimated to have caused 21.6 million illnesses and 216,500 deaths globally in 2000, affecting all ages. There is also one case of paratyphoid fever for every four of typhoid. The global emergence of multidrug-resistant strains and of strains with reduced susceptibility to fluoroquinolones is of great concern. Developments are being made in the understanding of molecular pathogenesis, and genomic and proteomic studies reveal the possibility of new targets for diagnosis and treatment. The importance of safe water, sanitation, and immunisation in the presence of increasing antibiotic resistance is paramount. Routine immunisation of school-age children with Vi or Ty21a vaccine is recommended for countries endemic for typhoid. Vi vaccine should be used for 2-5 year-old children in highly endemic settings.[7- 10] Hence; the present study was conducted for assessing the efficacy of various antibiotic therapies in treating typhoid.

Butler et al compared the clinical and bacteriological efficacies of azithromycin and chloramphenicol for treatment of typhoid fever, 77 bacteriologically evaluable adults, with blood cultures positive for Salmonella typhi or Salmonella paratyphi A susceptible to their assigned drugs, were entered into a randomized open trial at four hospitals in India. Forty-two patients were randomized to receive azithromycin 500 mg p.o. od for 7 days and 35 to receive chloramphenicol 2-3 g p.o. od in four divided doses for 14 days. Thirty-seven patients (88%) in the azithromycin group responded with clinical cure or improvement within 8 days and 30 patients (86%) in the chloramphenicol group responded with cure or improvement. By day 14 after the start of treatment, all patients treated with azithromycin and all except two of the patients treated with chloramphenicol (94%) were cured or improved. Blood cultures repeated on day 8 after start of therapy showed eradication of organisms in 100% of patients in the azithromycin group and 94% of patients in the chloramphenicol group. By day 14 the eradication rate in the chloramphenicol group had increased to 97%. Stool cultures on days 21 and 35 after start of treatment showed no prolonged faecal carriage of Salmonella spp. in either group. These results indicated that azithromycin given once daily for 7 days was effective therapy for typhoid fever in a region endemic with chloramphenicol-resistant S. typhi infection and was equivalent in effectiveness to chloramphenicol given to patients with chloramphenicol-susceptible infections.[11]

β-Lactam antibiotics have been considered ineffective against organisms which grow inside mammalian cells, such as serovars Typhi and Typhimurium, despite their excellent in vitro activity, because their concentrations inside mammalian cells are much lower than outside. However, the efficacy of newer cephalosporins, including oral cefixime for typhoid fever, has been proven in several clinical studies.[12- 14] Makhnev MV et al investigated the efficiency of application in clinics and of 14 antimicrobial agents representing almost all basic chemical classes. A remarkable variation of frequency and type of S. typhi resistance to these preparations up to epidemic and especially in its process was demonstrated. The absence of absolute (100%) efficacy of the investigated agents in vivo and in vitro was shown. The reasons of low efficacy of etiotropic treatment of the patients with typhoid fever are analysed.[15]

CONCLUSION

All the three antibiotics were equally effective among typhoid fever patients.

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