ROLE OF CIPROFLOXACIN IN TYPHOID FEVER

Pages with reference to book, From 9 To 10

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ABSTRACT

A study was conducted to investigate the effects of ciprofloxacin in typhoid fever and to compare its efficacy with chloramphenicol. Eighty patients between 20-45 years with positive blood culture were included in the study. Seventy five percent patients treated with ciprofloxacin became a febrile within 72 hours while with chloramphenicol it took upto 120-144 hours for the same percentage of patients to become a febrile. Four patients resistant to chloramphenicol, cotrimoxazole and ampicillin/amoxycillin, also responded to ciprofloxacin. There were no significant ad verse effects indicating that ciprofloxacin is safe and effective drug for resistant and nonresistant cases of typhoid fever (JPMA 42: 9,1992).

INTRODUCTION

Enteric fever continues to be a serious public health problem in many developing countries including Pakistan. Strains of S. typhi resistant to chloramphenicol, cotrimoxazole and ampicillin/amoxycillin have been reported in Pakistan[1] and constitute a therapeutic problem. Ofloxacin, a fluorinated quinolones, has been found effective in cases of typhoid fever including those resistant to chloramphenicol, contrimoxazole and ampicillin/amoxycillin[1,2] Ciprofloxaciin proved highly effective against salmonella infections in mice[3], suggesting that it might also be of value in humans. It has been used in various enteric infections including traveller's diar rhoea, diarrhoea caused by enterotoxigenic E. coli and unknown pahogens[4]. The current study was conducted to investigate the effects of ciprofloxacin and compare its efficacy with chloram phenicol in typhoid fever.

PATIENTS AND METHODS

From 1987 to September, 1990, 80 patients between 20-45 years of age, presenting with fever of not more than 2 weeks duration, clinical examination compatible with acute typhoid fever and positive blood culture for salmonella typhi, were included in the study. Those with history of hypersensitivity to quinolones and who had been administered other antibiotics were excluded. Patients were randomised into three groups. Group A included 38 patients treated with oral ciprofloxacin, 250 mg twice daily for 10 days and group B included 38 patients treated with chloramphenicol 500 mg 6 hourly for 14 days. Group C had four patients, whose blood culture yielded multi-drug resistant S. typhi. They were also treated with ciprofloxacin. The efficacy of antimicrobials was judged in terms of period of defervescence. Patients were followed up clinically and biochemically for four weeks for any adverse effect and bacteriologically for relapse.

Bacterial isolations

Blood cultures were taken from all febrile cases in brain heart infusion broth (5-7 ml broth) and incubated at 37°C for 7 days. Subcultures were carried out every day on blood agar and on MacConkey medium. Blood culture bottles were examined macroscopically for any turbidity. Gram film was prepared and a direct sensitivity test was put up on sensitivity agar (oxoid). The cultures were positive within 24 to 72 hours (on first to third subcultures).

Identification

API 20 E (API system S.A. montalien vercien, France) was used for the biochemical identification of strains. Final identification and serotyping was performed with standard antisera (Wellcome Reagents Ltd., U.K. and Difco Labs., Detroit, USA).

Antibiotic discs

The susceptibility of the strains was tested on sensitest agar (oxoid) with standard discs TMP-SMZ (25 mcg), chloramphenicol (10 mcg), ampicillin (10 mcg), ofloxacin (5 mcg), cefota.xime (30 mcg) and ciprofloxacin (5 mcg).

RESULTS

Blood culture in typhoid cases

The susceptibility of 80 strains of S. typhi (by disc diffusion technique) is given in Table I.

TABLE I. S. typhi sensitivity pattern (n = 80)

Antibiotic	Sensitive		Resistant	
	No.	(%)	No.	(%)
Ampicillin (10 mcg)	76	(95)	4	(5)
Cotrimoxazole (25 mcg)	76	(95)	4	(5)
Chloramphenicol (10 mcg)	76	(95)	4	(5)
Cefotaxime (30 mcg)	80	(100)		0
Ofloxacin (5 mcg)	80	(100)		0
Ciprofloxacin (5 mcg)	80	(100)		0

All cases were sensitive to ciprofloxacin, ofloxacin and cefotaxime. Four cases showed multi drug-resistance, i.e., resistance to cotrimoxazol, ampicillin and chloramphenicol. The rest of 76 were sensitive to the commonly used anti-typhoid drugs, i.e., chloramphenicol, ampicillin and cotrimoxazole besides being sensitive to ciprofloxacin, ofloxacin and cefotaxime. Seventy five percent of patients treated with ciprofloxacin became afebrile within 72 hours while, with chloramphenicol, it took 120-144 hours for the same percentage of patients to become afebrile (Table II).

TABLE II. Interval from start of therapy with either drug to defervescence in patients with typhoid fever.

Interval (Hours)	% of patients given	
	Ciprofloxacin	Chloramphenicol
Within 36	10.5	0
36 - 48	42.1	0
48 - 72	26.3	5.3
72 - 96	21.0	5.3
96 - 120	0	15.7
120 - 144	0	26.3
144 - 168	0	21.0
168 - 192	0	21.0
192 - 216	0	5.3

Four patients resistant to chloramphenicol, cotrimoxozole and ampicillin also responded to ciprofloxacin therapy. No significant adverse clinical or biochemical reactions or relapse was documented over a period of four weeks follow-up in all the groups of patients.

DISCUSSION

Chioramphenicol has long been accepted as an effective treatment of enteric fever while cotrimoxazole and ampicillin/amoxycillin are the alternative choices. However, in view of the emergence of strains of S. typhi resistant to these drugs, search for other drugs which can effectively combat these strains is also going on. In the present study, ciprofloxacin was found to be effective in terms of early remission and shorter treatment period as compared to chioramphenicol. In our previous study[2], ofloxacin, another member of the quino lones group, produced defervescence in 85% of the typhoid patients within 72 hours against 75% with ciprofloxacin indicating that the efficacy of ciprofloxacin is comparable to that of ofloxacin and much superior to that of chioramphenicol. Four S. typhi patients resistant to chioramphenicol, cotrimoxazole and ampicillin/amoxycillin, also responded to ciprofloxacin, indicat ing that ciprofloxacin is a safe and effective treatment for resistant and nonresistant cases of typhoid fever and can be prescribed for shorter duration of time.

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