

ONE-DAY TREATMENT OF SHIGELLOSIS WITH CIPROFLOXACINE

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ABSTRACT

The considerable epidemic potential of Shigellosis in extreme situations determines their socio-medical significance and therapeutic challenge. In the First Infectious Clinic, Department of Infectious Diseases and Epidemiology, Medical University of Varna, 30 patients aged between 18 and 51 years were administered ciprofloxacin at a dose of 500 mg twice daily for one day only. Their mean hospital stay was $7,48 \pm 1,27$ days long. The control group consisted of 24 age-matched patients treated with other chemotherapeutic drugs for 3-5 days which mean hospitalization was $8,04 \pm 2,99$ days long. In 27 ciprofloxacin-treated patients the clinical healing occurred on the third hospital day. The febrility disappeared and the stools normalized. The pathological admixtures of mucus and blood disappeared until the third day. The authors conclude that the one-day treatment of shigellosis with ciprofloxacin is safe and effective. The short duration of the therapy reduces the isolation period. No side effects are observed at all.

Key words: Shigellosis, ciprofloxacin, one-day treatment, Shigella sensitivity, duration of hospitalization

INTRODUCTION

During the recent 3 years, the incidence rate of Shigella infections in Bulgaria varies between 30 and 40 %000 manifested by alternating decrease and increase (2). Obviously, these values are typical of this country taking into consideration the present sanitary-hygienic environment and health education of the population. The mortality and lethality rates remain relatively unchanged in 1997 and 1998, too, i. e., of 0,11 %000 and 0,34 %000, respectively (1,2). The epidemic process is characterized by sporadic cases and/or epidemic outbreaks that prevail in children's homes, maternity homes, social care homes, psychiatric clinics, etc. The morbidity rate of Shigellosis increases in some countries like Chile but decreases in other ones like Poland (11,14). The considerable epidemic potential of Shigellosis in extreme situations determines their socio-medical significance and therapeutic challenge. The management strategy is complicated by the continuously enlarging multi-drug resistance of a series of Shigella strains towards gentamycin, chloramphenicol, TMP-SMX, ampicillin, cephalosporins, etc. (4-9,11,14). On the contrary, a preserved susceptibility towards quinolones has recently been reported (7-9,11). The epidemic course of bacterial dysentery in the town and region of Varna, Bulgaria, in summer necessitates a timely looking for new therapeutic schedules for this disease.

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Since 1973, an important task of the Department of Infectious Diseases, Medical University of Varna, consists in the creation of a shortened therapeutic course of Shigella infections. A lot of combinations of chemotherapeutic drugs applied at an optimal dosage for 24 or 48 hours have already been approved (10) (Table 1).

Table 1. Therapeutic combinations for Shigellosis

No	Drug combinations	Daily dosage
1.	Chloramphenicol	4 x 0,5
	Nalidix	3 x 1,0
2.	Kanamycin per os	4 x 1,0
	Nalidix	4 x 1,0
3.	Chloramphenicol	4 x 0,5
	Kanamycin per os	4 x 1,0
4.	Ampicillin	4 x 0,5
	Kanamycin per os	4 x 1,0
5.	Tetracycline (Tetraolean)	4 x 0,5
6.	TMP - SMZ	3 x 0,48
7.	Ampicillin	4 x 0,5
	Streptomycin per os	4 x 1,0

As there are reports in the literature available about the usage of ciprofloxacin in the management of Shigella infec-

tions (3) we decided to prove the effectiveness of a shortened schedule in our patients, too.

The aim of the present study is to follow-up the opportunities for one-day treatment of Shigellosis with ciprofloxacin based on literature data available (2,3,12,13).

MATERIAL AND METHODS

Out of a total of 196 bacterial dysentery cases in the town and region of Varna, Bulgaria, 57 patients aged over 14 years and hospitalized in the First Infectious Clinic, Department of Infectious Diseases and Epidemiology, in 1998 were followed-up. Thirty patients aged between 18 and 51 years (at a mean age of $20,79 \pm$ years) were administered ciprofloxacin at a dose of 500 mg twice daily for one day only. With 24 soldiers in a military outfit (80 % of the cases), *S. sonnei* was isolated, in 3 patients (10 % of the cases), *S. flexneri 2a* was found; in two patients (6,67 % of the cases) *S. flexneri 1a* was established, but in one patient (3,33 % of the cases) both *S. sonnei* and *S. flexneri 1b* were proved (Fig. 1). The distribution of the Shigella strains in the control group is demonstrated on Fig. 2.

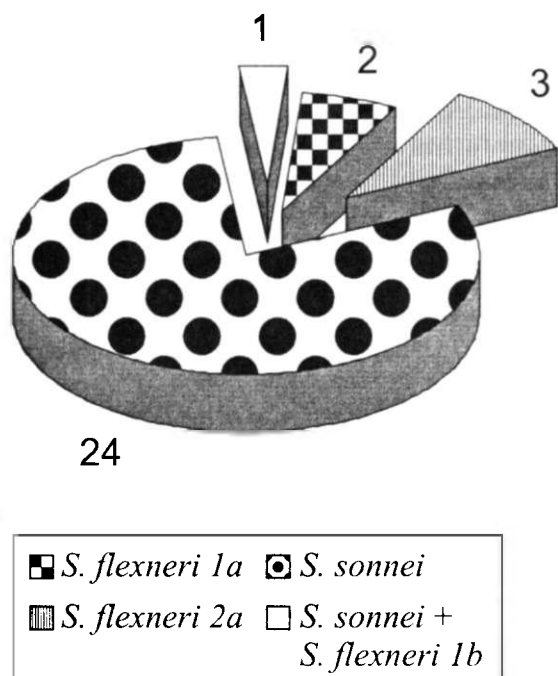


Fig. 1. Relative share of Shigella species isolated in patients treated with ciprofloxacin

mean hospital stay was $7,48 \pm 1,27$ days long. The control group consisted of 24 age-matched patients treated with other chemotherapeutic drugs for 3-5 days. Their mean hospitalization was $8,04 \pm 2,99$ days long. The diagnosis of Shigella infection was made using routine clinical and epidemiologic data and confirmed by microbiological examination of the faecal cultures.

Clinical healing was assessed according to the absent mucus-bloody diarrhoea while microbiological sanitation was

proved according to the absent *Shigellae* during two control examinations of the faeces for bacterial flora in two consecutive days 24 hours after ciprofloxacin treatment cessation.

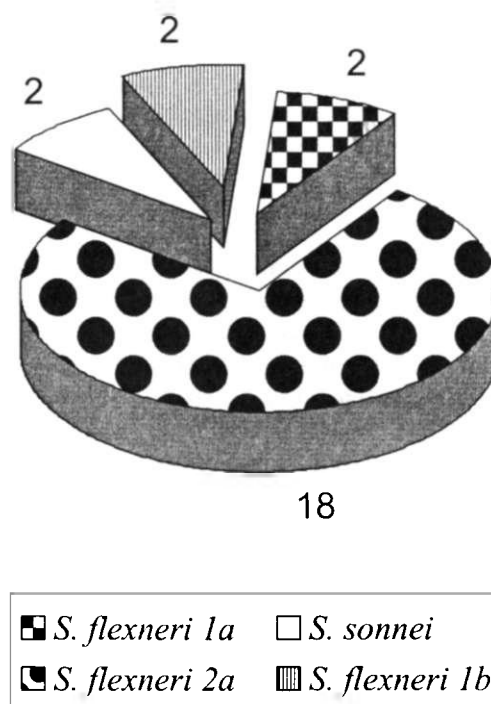


Fig. 2. Relative share of Shigella species isolated in control patients

RESULTS AND DISCUSSION

Some of our data are illustrated on Tables 2 and 3.

Table 2 shows the characteristics of Shigellosis in the patients with ciprofloxacin therapy and in the control patients.

The sensitivity of the different Shigella strains towards some chemotherapeutic means is demonstrated on Table 3. It should be mentioned that the epidemic outbreak in the military outfit was due to the poor sanitary-hygienic conditions and causing a contact mechanism of infection. Patients' hospitalization was performed on the second and third day after the onset of complaints. One soldier was an infection carrier and did not demonstrate any clinical symptoms of the disease.

The clinical course was typical of the disease manifested by a moderately severe colitis and febrile intoxication syndrome with the rest patients. There was a certain dehydration was noted in 17 patients necessitating a supplementation of a peroral and parenteral rehydration along with the etiologic therapy. The isolation of *S. Sonnei* coincided with the increasing incidence rate of this strain in other epidemic outbreaks in the country. In 1998, *S. flexneri* was isolated in 63 % but *S. sonnei* in the rest 37 % of the cases (2). Ciprofloxacin therapy started after taking the samples for microbiological testing already at the day of hospitalization.

Table 2. Characteristics of Shigellosis

No	Parameters	Ciprofloxacin group (n=30)	Control group (n=24)
1.	Prehospital duration of disease (days)	143 (1,75±1,47)	143 (2,10±1,20)
2.	Stool frequency before treatment / 24 h (3-4 ч 15-20)	29 (96,67 %)	24 (100 %)
3.	Vomiting	0	4 (16,67 %)
4.	Anorexia	29 (96,67 %)	24 (100 %)
5.	Abdominal pain	27 (90 %)	24 (100 %)
6.	Fever (37,3 OC ч 40 OC)	17 (56,67 %)	16 (80 %)
7.	Abdominal tenderness	13 (43,33 %)	13 (54,17 %)
8.	Colitis sigmoidea spastica	15 (50 %)	13 (54,17 %)
9.	Dehydration	20 (66,67 %)	16 (66,67 %)
10.	Bloody mucoid diarrhea	25 (83,33 %)	20 (83,33 %)
11.	Asymptomatic patients	1 (3,33 %)	0
12.	Leukocytosis: > 10 G/l	4 (13,33 %)	10 (41,67 %)
	< 4 G/l	3 (10 %)	1 (4,17 %)

Table 3. Sensitivity and resistance of two *Shigella* strains to antibacterial agents

	<i>S. sonnei</i>			<i>S. flexneri</i> 2a		
	R (%)	S (%)	I (%)	R (%)	S (%)	I (%)
Ampicillin	100			83	17	
Piperacillin	73,33	23,33	3,34	88	12	
Chloramphenicol	26,67	40	33,33	83	17	
Cephalosporins	23,33	53,33	23,34	33	45	22
Gentamycin	50	33,33	16,67	4	96	
Amikalin	40	50	10	12	88	
TMP-SMZ	36,66	50	13,34	40	50	10
Nalidixic acid		100			100	
Ciprofloxacin		100			100	

In 27 patients (90 % of the cases), the clinical healing occurred on the third hospital day. The febrility disappeared and the stools normalized. The pathological admixtures of mucus and blood disappeared until the third day. One case required prolongation of the therapy with another drug, i.e., with nelidix. The bacteriological sanitation occurred during a period of $5,48 \pm 1,57$ days in 96,67 per cent of the cases but after $7,80 \pm 2,53$ days ($t = 4,40$; $p < 0,001$) in the control group.

No side effects after ciprofloxacin application were observed at all.

CONCLUSIONS

1. One-day treatment with ciprofloxacin is safe and exerts a very good clinical and bacteriological effect.
2. Short duration of the therapy reduces the isolation period and seems, therefore, economically more effective.
3. There are neither side reactions, nor unwanted effects after the administration of ciprofloxacin at all.

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