

ANTIBIOTIC RESISTANCE OF SHIGELLA SPECIES IN IRAN

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ABSTRACT

Antibiotic resistance in Shigella species has been showing a rising trend all over the world. This study was performed to discover the state of antibiotic resistance of Shigella species with regards to six common antibiotics in use in Iran.

INTRODUCTION

A study of diarrhoeal diseases in Tehran(7) showed Shigella species to be the commonest cause of bacterial diarrhoea in this region. Their study showed a higher degree of antibiotic resistance in the urban areas as compared with the rural regions.

A further paper (2) in 1972 showed that this state of affairs was worsening and the degree of antibiotic resistance was rising further.

Our present study aims to discover the degree of

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Antibiotic Resistance of

began to rise in April and tended to fall in October.

Subgroups of Shigella isolated in 230 isolations:

TYPE A	Sh. Dysenteriae.....	22.....	9.5%
TYPE B	Sh. Flexneri.....	141.....	61.2%
TYPE C	Sh.Boydii.....	33.....	14.5%
TYPE D	Sh.Sonnei.....	34.....	14.8%

Antibiotic resistance of 100 isolations of Shigella;

<u>Antibiotic</u>	<u>no. of ssp. tested</u>	<u>S</u>	<u>I</u>	<u>R</u>
Ampicillin	100	24	-	76
Chloramphenicol	100	39	14	47
Co-Trimoxazole	100	32	1	67
Cephalexin	100	70	18	12
Nalidixic acid	100	100	-	-
Tetracycline	100	23	-	77

DISCUSSION

Our data shows an isolation rate of 9.5% for Shigella dyssentery in adult patients with diarrhea. The major subgroup detected was Sh.Flexneri comprising 61% of the total. A previous study(7) 16 years ago showed an isolation rate of 15% for Shigella amongst 650 patients inves-

antibiotic resistance of *Shigella* species in Tehran with regards to Ampicillin, Chloramphenicol, Co-Trimoxazole, Cephalexin, Naladixic acid and Tetracycline.

MATERIALS & METHODS

Stool specimens were collected from diarrheal patients for a period of 18 months from March 1984 until August 1985. These specimens were collected in Stuart medium for *Shigella* and *Salmonella* species and in Cary-Blair medium for *Vibrio cholerae*. Swabs obtained were plated out on M^C conkey, Selenite F and *Salmonella-Shigella* agar. Typical colonies of shigella were picked out and transferred to T.S.I. agar for further differentiation and subsequently characterised by further biochemical and serological tests.

Drug sensitivities were performed on Mueller-Hinton agar plates following the standardised disk diffusion method(3) with disks of following drug concentration: Ampicillin 10ug, Chloramphenicol 30ug, Co-Trimoxazole 23.75+1.25ug, Cephalexin 30ug, Tetracycline 30ug, Nalidixic acid 30ug. The results of antibiograms were recorded as sensitive, intermediate and resistant.

RESULTS

In the 18 months period of study 2,418 stool specimens were investigated and 230 isolations of shigella species were made. It was noted that isolations of *Shigella*

tigated. The study also showed Sh.Flexneri to be the major subgroup comprising 80% of the total. The previous study differed in that the data was entirely based on children under 7 years of age where as the present work is based on adult patients.

Workers in Bangladesh(11), Madagascar(9) and in Ethiopia(1) have also shown Sh.Flexneri to be the most prevalent subgroup of Shigella in Asia and Africa. In India in the Banglore region(5) a prevalence of Sh. Dysenteriae type 1 have been noted. In Iran epidemics of Shigella dysentery are always due to Sh. Flexneri and during this study two small epidemics that were noted in homes for the disabled were entirely due to Sh.Flexneri.

Antibiotic resistance of Shigella species detected in this study was extremely high except for Nalidixic acid and Cephalixin. Compared with the previous study(7) our study showed a rise in Tetracycline resistance from 51 to 77%. Chloramphenicol showed no change in resistance pattern. For Ampicillin there was a rise in antibiotic resistance from 10% to 76% when comparing with a previous work(10) on Sh.Flexneri isolations in the Caspian Littoral.

Compared to other developing countries, antibiotic resistance of Shigella species is extremely high in Iran. Whereas in Bangladesh, ampicillin resistance of shigella species is 3%(11) and the figure for Madagascar is 14%(9) and in Iran this figure is 76 percent.

The main reason for this high degree of antibiotic resistance is the indiscriminate use of antibiotics by both

patients and doctors in this country.

In our study we found no resistance to Naladixic acid and this has been similar to the findings of other workers in this field(6). Nalidixic acid is becoming advocated as a possible treatment for severe cases of Shigellosis not responding to the more current antibiotics such as Ampicillin and Co-Trimoxazole(4,8).

We believe that due to the benign nature of this condition which in most patients tends to be selflimiting, antibiotics should be reserved for severe cases, of which we fortunately have only a few cases each year.

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