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Unusual Complications in a Multidrug Resistant *Salmonella typhi* Outbreak

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A sudden change in the clinical profile of typhoid fever was noticed in Bangalore city during September and October, 1990. Prolonged fever inspite of standard antibiotics, multidrug resistance and unusual

complications were seen in these patients. A detailed analysis of this clinical material is presented.

Material and Methods

Fifteen children, ages ranging from 1½ to 12 years were admitted with typhoid fever in the pediatric ward of St. John's Medical College Hospital, Bangalore, over a period of two months. Clinical features, laboratory investigations and response to treatment were studied.

The diagnosis of typhoid fever was based on clinical picture supported by the laboratory parameters: (i) isolation of *S. typhi* from blood; (ii) a four fold rise in widal agglutinins; (iii) a single 'O' and 'H' titre of 1/160 or more.

Results

In our series, male to female ratio was 4:1. A total of 73.3% of cases had continuous fever, 20.0% had remittent fever and 6.7% had intermittent fever. Before admission to our unit, 40% had fever of 5-10 days, 40.0% had fever for more than 10 days. The remaining 20% were admitted within 5 days of fever onset. Fever persisted for an average of 6-7 days after instituting culture and sensitivity based drugs. Total duration of fever ranged from 11-42 days. *S. typhi* was isolated from blood in 60% cases. All the culture negative cases had received prior antibiotics. The average duration of fever in culture positive cases was 24 days and in culture negative cases 20 days. However, this was not statistically significant. Multidrug resistance was noted in 88.9% of cases. The *in vitro* antibiotic sensitivity pattern as assessed by method of Kirby-Bauer and unusual complications are shown in Tables I & II.

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TABLE I—*In vitro* Sensitivity Studies

Drug	Sensitivity (%)	Resistance (%)
Chloramphenicol	22.2	77.8
Cotrimoxazole	44.4	55.6
Ampicillin	55.6	44.4
Gentamicin	100.0	—
Furoxone	44.4	55.6
Ciprofloxacin	100.0	—

TABLE II—Unusual Complications

Unusual complications	Number
CNS	
<i>Salmonella typhi</i> meningitis	2
Chorea	1
Intracranial hemorrhage	1
Hematology	
Consumptive coagulopathy	1
Bone marrow depression	1
Renal	
Acute renal failure due to endotoxic shock	1
Electrolyte imbalance	
Hypernatremia	1
Hypokalemia	1

Discussion

Prolonged pyrexia, unusual complications and multidrug resistance was observed in our patients with enteric fever. A similar clinical profile was reported by other Pediatricians of Bangalore City during the same period.

The total duration of fever ranged between 11 and 42 days, quite similar to earlier reports on chloramphenicol resis-

tant *S. typhi*(1,2). Recently, similar resistance to cotrimoxazole, ampicillin and amoxicillin have been reported by others too(3,4).

S. typhi meningitis has been reported only in 14 children in India so far(5-9). *S. typhi* was isolated from the CSF of two of our patients. A 9-year-old girl with typhoid fever developed chorea during hospital stay. A 12-year-old boy presented with endotoxic shock, with resultant disseminated intravascular coagulation. He developed intracranial hemorrhage and acute renal failure. He had unexplained hypernatremia with hypokalemia for five days. A bone marrow aspiration after the child was stabilized, revealed hypoplasia of all the cellular elements of the marrow. Hasan *et al.* have reported consumptive coagulopathy in 3% of cases(10). However, they have not reported any case with bone marrow depression(10).

There was no mortality in our study. Phage typing of the isolates showed that the majority of strains of *S. typhi* resistant to multiple drugs belonged to phase type 'E' biotype I. In a study published from Bangalore, wherein neurological complications of *S. typhi* were studied between 1981 and 1989 in 55 patients, phage A and E, were sensitive to chloramphenicol. Chloramphenicol resistance was noticed in phage type 'O'(9).

This study warns us of a changing clinical spectra and emergence of *in vivo* antibiotic resistance of *S. typhi* to standard antibiotics. Vaccination with the newer vaccine may prevent morbidity and mortality resulting from typhoid fever.

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