



SENSITIVITY PROFILE OF ANTITYPHOID DRUGS IN CHILDREN, A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT 82 culture positives for *S. enterica* serotype Typhi were studied to know the sensitivity pattern in our region of Kurnool. Sensitive strains to all first line drugs was found in 68.29% of cases (56 out of 82 cases). MDRST and XDRST were found in 24 and 2 cases respectively (29.29% vs 2.44%). All tested 3rd Generation Cephalosporins were found to be 100% sensitive. Fluoroquinolones were found to be resistant in 87.2% of growths. Meropenem, Piperacillin-Tazobactam, Aztreonam and azithromycin were found to be 100% sensitive even in XDRST growths.

KEYWORDS :

INTRODUCTION

Typhoid fever is a quite common infectious illness in our community. With the widespread usage of antibiotics over a period of time antimicrobial resistance has emerged as a threat and posing difficulties in treating typhoid in children. An attempt is made in this study to know the pattern of resistance in our area. Multi Drug Resistant Typhoid has emerged since early 1990s and now some cases of extensive drug resistant typhoid cases are being reported (XDRST). Hence this study is undertaken to know the drug resistant patterns in our region.

MATERIALS AND METHODS

82 cases were proved to be positive by culture and sensitivity testing using BacTec method. Various sensitivity patterns were observed and grouped according to sensitivity pattern. All the results of sensitivity testing were tabulated and analyzed using SSP statistical software.

MDRST is considered as *S. Enterica* serotype Typhi resistant to Ampicillin, amoxycillin, chloramphenicol and cotrimoxazole with or without resistance to fluoroquinolones but sensitive to 3rd Gen Cephalosporins.

XDRST is considered as *S. Enterica* serotype Typhi resistant to all four first line drugs, fluoroquinolones and also 3rd Gen Cephalosporins.

RESULTS AND DISCUSSION

Table 1:- Distribution Of Cases In Relation To Age Group And Sex

Age group	Male	Female	Total
<1 year	4	1	5 (15.85%)
1-3 years	7	6	13 (26.83%)
4-6 years	9	13	22 (26.83%)
>6 years	24	18	42 (51.21%)
Total	44 (53.66%)	38 (46.34%)	82 (100%)

Majority of cases were seen in the age group of 4-12 years (78.04% of cases i.e. 64 cases out of 82). Rest of cases were seen in children of less than 3 years age group (18 out of 82 cases accounting for 21.96%) 53.66% were males compared to 46.34% of female children.

Table 2:- Distribution Of Cases In Relation To Sensitivity Pattern

Sensitivity pattern	Number of cases	percentage
MDRST	24	29.29%
XDRST	2	2.44%
NO MDRST/XDRST	56	68.29%
Total	82	100%

Out of 82 cases of culture positive cases of *Salmonella* serovar Typhi 68.29% were neither MDRST or XDRST and are sensitive to commonly used anti typhoid drugs like 3rd Gen cephalosporins. Kasmiraetal reports MDRST at 10% in 2018 in J infect Dis.¹

But in our series 24 reports out of 82 cases were growing MDRST (29.29%) and 2 cases were found to be growing XDRST organisms (2.44%)

Table 3:- Distribution Of Cases In Relation To Fluoroquinolone Sensitivity Pattern

Sensitivity pattern	Number of cases	percentage
Quinolone Resistant	72	87.8%
Quinolone sensitive	10	12.2%
Total	82	100%

Resistance to Fluoroquinolones was observed in 87.8% of cases (72 out of 82) and sensitive to fluoroquinolones was only in 10 cases (12.2%).

Table 4:- Distribution Of Cases In Relation To XDRST

Drug to which sensitive	Number of cases	percentage
Azithromycin	2 (n=2)	100%
Aztreonam	2 (n=2)	100%
Piperacillin-Tazobactam	2 (n=2)	100%
Meropenem	2 (n=2)	100%

In XDRST group out of two cases observed all the above four drugs were found to be effective. Hence the need to preserve these drugs as reserve and not to be used as first line medications. Similar results are obtained by PL Negi et al.⁵

Table 5:- Distribution Of Cases In Relation To MDRST Growth

Ceftriaxone sensitivity	24 (n=24)	100%
Cefotaxim sensitivity	24 (n=24)	100%
Cefixime sensitivity	24 (n=24)	100%
Ofloxacin sensitivity	4 (n=24)	16.67%

Among MDRST isolates all three tested 3rd Gen Cephalosporins are found to be 100% effective. But Fluoroquinolones sensitivity was found to be only 16.67% and hence cant be a choice in children having MDRST growth in their Blood cultures.

Table 6:- Distribution Of Cases In Relation To Sensitivity Pattern When Growth Is Neither MDRST Or XDRST

Drug	Number of cases sensitive	Percentage
Ampicillin	48 (n=56)	85.7%
Amoxiclav	50 (n=56)	89.29%
Ceftriaxone	56 (n=56)	100%
Cefixime	56 (n=56)	100%
Cotrimaxazole	56 (n=56)	100%

Among growths having no MDRST or XDRST sensitivity to first line drugs was found to be very high with sensitivity of 85.7% to Ampicillin, 89.29% to Amoxiclav and 100% sensitivity to ceftriaxone, Cefixime and Cotrimoxazole.

CONCLUSIONS

- 82 culture positive cases were studied
- 56 out of 82 cases (68.29%) were found to be sensitive strains i.e. Neither MDRST nor XDRST and 29.29% were found to be MDRST and 2.44% were found to be XDRST.

3.All XDRST were found to be sensitive to Piparacillin-Tazobactem, Meropenem, Aztreonam and Azithromycin which should be preserved as reserve drugs and not to be used as first line drugs.

4.Among MDRST growths all were sensitive to 3rd Gen Cephalosporins

5.Among Non-MDRST and Non-XDRST growths high sensitivity to first lines drugs was observed with 100% sensitivity to 3rd Gen Cephalosporins and cotrimoxazole, 85.71% to Ampicillin and 89.29% to Amoxiclav.

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