

ABSTRACT

TITLE :

A Study on Current Antimicrobial Susceptibility Pattern of Typhoidal *Salmonellae* causing Enteric fever in School going children and Young adults.

BACKGROUND:

Enteric fever is a major public health concern in India, especially among school aged children and young adults. Extensive use of ciprofloxacin to treat *Salmonella Typhi* and *Salmonella Paratyphi A* infections has lead to emergence of resistance, resulting in clinical failure and delayed treatment response which is associated with chromosomal mutation in Quinolone resistant determining region (QRDR) genes encoding DNA gyrase and Topoisomerase IV. Hence, continuous monitoring is important to better manage and combat resistance.

OBJECTIVES:

The objectives of this study were i) to isolate and identify the *Salmonella species* causing Enteric fever, ii) to study the antimicrobial resistance pattern of the isolates and iii) to do molecular characterisation of the isolates with reduced susceptibility to fluoroquinolones.

MATERIALS AND METHODS:

A cross sectional study was conducted for a period of one year (June 2016-May 2017). A total of 257 blood samples collected from patients with clinical suspicion of Enteric fever for culture. Isolation and identification followed standard protocols. Antimicrobial susceptibility was determined by Kirby-Bauer disc diffusion method. Minimum inhibitory concentration of Ciprofloxacin was determined by Broth microdilution method. Isolates with reduced susceptibility to ciprofloxacin were subjected to PCR and DNA sequencing of QRDR genes.

RESULT:

Enteric fever most commonly affects children (5-7 years) and young adults (18-24 years), with significant association observed among patients with outside food intake. Antimicrobial susceptibility pattern were similar among *Salmonella Typhi* (n=11) and *Salmonella Paratyphi A* (n=1) isolates . MDR was replaced with reduced susceptibility to ciprofloxacin (33.3 %- intermediate susceptible, 66.7% -resistant). All the isolates were susceptible to III generation Cephalosporins and Azithromycin. Pefloxacin disc diffusion testing as a surrogate marker for ciprofloxacin susceptibility was promising, which correlates well with ciprofloxacin MIC (EUCAST) and molecular characterisation of QRDR genes. Most common mutation observed were at codon 83 and codon 87 in gyrA; no mutation was observed in gyrB while mutation at codon 80 of parC gene observed in 33% isolates .

CONCLUSION:

Enteric fever is one such infection which poses challenges in antimicrobial resistance . Hence, continuous monitoring is important to combat resistance and treat effectively.

Keywords – Enteric fever , Ciprofloxacin ,QRDR .