

Letter to Editor

Monitoring of antibiotic susceptibility pattern of blood isolates of *Salmonella enterica* var Typhi from a tertiary care hospital in North India**Varsha Gupta, Lipika Singhal, Nidhi Tejan, Nidhi Singla, Rohit Kumar, Jagdish Chander***From, the Department of Microbiology, Government Medical College and Hospital, Sector 32, Chandigarh India***Correspondence to:** Dr. Varsha Gupta, Department of Microbiology, Government Medical College and Hospital, Sector 32, Chandigarh. Email - varshagupta_99@yahoo.com.*Received: 20 August 2016 Initial Review: 30 August 2016 Accepted: 07 September 2016 Published Online: 19 September 2016*

Sir,

Enteric fever carries a significant morbidity and mortality. Antibiotic therapy constitutes the mainstay of its management. However, failure to treat it properly leads to prolonged illness, development of a carrier state and increased dissemination [1]. Considering the changing trends in the susceptibility patterns as re-emergence of susceptibility to conventional first-line antibiotics, reduced susceptibility towards ciprofloxacin, emergence of *Salmonella enterica* var Typhi (*S. Typhi*) resistant to third-generation cephalosporins, continual monitoring of drug resistance patterns is vital [1-3].

A total of 192 non-repeat *S. Typhi* isolates obtained from conventional blood cultures performed for routine bacterial culture sensitivity between January 2011 and December 2014 were included in the study. The identification of *S. Typhi* was done by the colony morphology and standard biochemical tests. They were confirmed by serotyping. Antibiotic susceptibility testing was done by Kirby Bauer's disk diffusion method according to CLSI 2015 guidelines [4] using commercially available disks (Hi-media Laboratories, India). Also minimum inhibitory concentration (MIC) of ciprofloxacin, chloramphenicol and ceftriaxone was determined by agar dilution and E-Test (Biomérieux) for all the isolates.

A high susceptibility of >99% was observed for the first-line antibiotics-chloramphenicol and co-trimoxazole. All the isolates (100%) were susceptible to chloramphenicol with a MIC of $\leq 8\mu\text{g/ml}$ both by agar

dilution test and E-test method with the MIC₅₀ being 1 $\mu\text{g/ml}$. This observation has therapeutic implication since these drugs could once again be used for the treatment of typhoid fever, but treatment should be carefully monitored for side effects.

Conversely, our study documents high resistance to ampicillin which is in contrast to recent studies from adjoining and different parts of India [2]. Resistance to nalidixic acid was found to be highest (100%) amongst all the antibiotics. For ciprofloxacin, majority of the *S. Typhi* isolates were in the intermediate susceptibility zone. This corroborated well with the MIC results whereby, majority of the *S. Typhi* were in the intermediate MIC range (0.125-0.5 $\mu\text{g/ml}$ -revised breakpoints). This may aid in better depicting the ciprofloxacin susceptibility at places where MIC determination is not accessible. The highest recorded MIC was 32 $\mu\text{g/ml}$ for *S. Typhi*, which is in the resistant MIC range ($\geq 1\mu\text{g/ml}$). High rate of susceptibility was seen towards azithromycin (100%) which is an orally effective drug using the newly suggested zone criteria by CLSI [4].

Azithromycin seems to be an effective therapeutic option; however, MIC determination would be necessary to understand its effectiveness in view of non-uniform susceptibility pattern noticed in various studies. [2,5.] Third generation cephalosporins remain the drug of choice with high susceptibility to cefotaxime and ceftriaxone. All the isolates had MIC ($\leq 1\mu\text{g/ml}$) for ceftriaxone by both agar dilution and E-Test. Judicious use is mandatory to prevent emergence of resistant strains.

REFERENCES

1. Gupta V, Kaur J, Chander J. An increase in enteric fever cases due to *Salmonella Paratyphi A* in & around Chandigarh. *Indian J Med Res.* 2009;129:95-8.
2. Singhal L, Gupta PK, Kale P, Gautam V, Ray P. Trends in antimicrobial susceptibility of *Salmonella Typhi* from North India (2001-2012). *Indian J Med Microbiol.* 2014;32(2):149-52.
3. Capoor MR, Nair D, Hasan AS, Aggarwal P, Gupta B. Typhoid fever: narrowing therapeutic options in India. *Southeast Asian J Trop Med Public Health.* 2006;37: 1170-4.
4. Performance standards for antimicrobial susceptibility testing; Twenty-fifth Informational Supplement. Clinical and Laboratory Standards Institute (CLSI) Wayne, PA; 2015.
5. Rai S, Jain S, Prasad KN, Ghoshal U, Dhole TN. Rationale of azithromycin prescribing practices for enteric fever in India. *Indian J Med Microbiol.* 2012; 30(1):30-3.

How to cite this article: Gupta V, Singhal L, Tejan N, Singla N, Kumar R, Chander J. Monitoring of antibiotic susceptibility pattern of blood isolates of *Salmonella enterica* var Typhi from a tertiary care hospital in North India *Eastern J Med Sci.* 2016; 1(1): 40-41.

Conflict of interest: None stated, Funding: Nil