World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:9, No:05, 2015

Emergence of Ciprofloxacin Intermediate Susceptible Salmonella Typhi in India

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Abstract : Introduction: An outbreak of Multi drug resistant S. Typhi (i.e. resistance to chloramphenicol, ampicillin, and trimethoprim-sulfamethoxazole) occurred in 1990's in India which peaked in 1992-93 and resulted in the change of drug of choice from chloramphenicol to ciprofloxacin for enteric fever. Currently an emergence of Ciprofloxacin susceptible S. Typhi isolates in the region is being reported which appears to be chromosomally mediated. Methodology: Six hundred sixty four strains were randomly selected from the time period between January 2008-December 2011 at the National Salmonella Phage Typing Centre, LHMC, New Delhi. The strains were representative of the north, central and south zones of India. All isolates were subjected to serotyping, biotyping, phage typing and then to antimicrobial susceptibility testing by CLSI disk diffusion (CLSI) technique to Ciprofloxacin, Cefotaxime, Ampicillin, Chloramphenicol, Trimethoprim-Sulfomethoxazole and Tetracycline. Subsequently MIC of the isolates was determined by E-test (AB-Biodisc). Results: More than 80% of the tested strains had intermediate susceptibility to ciprofloxacin. The E test revealed the MIC (Ciprofloxacin) of these strains to be in the range of 0.12 to 0.5 µg/ml. Sixty nine percent of ciprofloxacin intermediate susceptible strains belonged to Phage type E1 and fourteen percent of these were Vi- Negative i.e these could not be typed by the phage typing scheme of Craigie and Yen. All the strains remained susceptible to cefotaxime. Conclusion: Predominant isolation of intermediate susceptible S. Typhi strains from India would alter the recommendations of empiric treatment of enteric fever in the region. Alternative to the low cost ciprofloxacin will have to be sought or increased dosage and/or duration of ciprofloxacin will have to be recommended. The reasons for the trend of increase in percentage of intermediate susceptible S. Typhi strains are not clear but may be attributed partly to the revision of CLSI guidelines in 2013.

Keywords : salmonella typhi, decreased ciprofloxacin susceptibility, ciprofloxacin, minimum inhibitory concentration
Conference Title : ICMMAAC 2015 : International Conference on Medical Microbiology, Antimicrobial Agents and Chemotherapy
Conference Location : London, United Kingdom
Conference Dates : May 25-26, 2015