

Cardiac Phenomena Observed In Typhoid Fever

Bangladesh J Med Microbiol 2011; 05 (01): 26-30
Bangladesh Society of Medical Microbiologists

Original Article

Determination of minimum inhibitory concentration of Azithromycin, Ofloxacin and Ceftriaxone in Ciprofloxacin resistant *Salmonella* causing enteric fever

Shamima Kawser¹, Md. Rahul Amin Miah², Ahmed Abu Saleh³, Khandker Md. Nurus Sabah¹, Tanzima Begum⁴

¹Department of Microbiology, Delta Medical College, Mirpur-1, Dhaka, ²Department of Microbiology & Immunology, BSMMU, Shahbag, Dhaka, ³Department of Cardiology, Dhaka Medical College, Dhaka, ⁴Department of Pharmacology & Therapeutics, Delta Medical College, Mirpur-1, Dhaka

Abstract

The therapeutic alternatives available for use against ciprofloxacin resistant enteric fever isolates in an endemic area are limited. The antibiotics currently available are the quinolones, third-generation cephalosporins and azithromycin. In this study, the MICs of various drugs were determined for 100 enteric fever isolates (72 *Salmonella enterica* serovar typhi and 28 *Salmonella enterica* serovar paratyphi A). Ciprofloxacin resistant (100%) *Salmonella* strains were sensitive to ofloxacin and ceftriaxone showing MICs of 0.0078-2 µg/ml and 0.0156-2µg/ml respectively. *Salmonella* strains (98%) had MIC values 1-32 µg/ml for azithromycin. These results indicate that ofloxacin and ceftriaxone may be convenient alternative antimicrobial agents for *Salmonella* isolates.

Keywords: *Salmonella*, Minimum inhibitory concentration, Multi drug resistant *Salmonella*

Introduction

Enteric fever is caused by *Salmonella typhi* & *Salmonella paratyphi* A,B,C. Infection caused by ingestion of organisms in contaminated food or water or from contaminated hand¹. From 1948 to 1970s chloramphenicol was the drug of choice in developed countries and its use resulted in a reduction in mortality rates from 10% to 2%². Chloramphenicol resistant *Salmonella* strains first reported in Britain, in 1950 and in India in 1972. Gradually, resistance to multiple antibiotics developed. The first major epidemic of multidrug-resistant (MDR) *Salmonella typhi* (isolates resistant to ampicillin, chloramphenicol and cotrimoxazole) was reported in 1972 in Mexico³. In the last two decades, the worldwide emergence of multi-drug resistant strains of *Salmonella* has led to virtual withdrawal of chloramphenicol & its replacement with fluoroquinolones and third generation cephalosporins. Clinical treatment failures after the administration of ciprofloxacin and other fluoroquinolones to patient with typhoid fever attributable to these strains have been reported⁴.

Where fluoroquinolones, such as ciprofloxacin and ofloxacin, have become widely used, isolates of *Salmonella typhi* and *paratyphi* with reduced susceptibility to fluoroquinolones have become common⁵. The prevalence of resistance of *Salmonella typhi* to ciprofloxacin is very high also in Bangladesh. The injudicious administration and rampant use of quinolones in Bangladesh probably contributed to the high prevalence of reduced susceptibility (>88%) and the emergence of very high level or complete resistance (>4 g/ml) of isolates of *Salmonella typhi* to ciprofloxacin⁶. Furthermore, the recent report of an isolate of *Salmonella typhi* from Bangladesh with high level resistance to ceftriaxone means that, untreatable typhoid may become a reality. There is a need for alternative antimicrobial agents to treat such MDR infections⁷. In the present study, minimum inhibitory concentration of ciprofloxacin, ofloxacin, ceftriaxone and Azithromycin for *Salmonella enterica* serovar typhi was determined by agar dilution method.

The present study was aimed to compare the MICs of Azithromycin, Ofloxacin Ceftriaxone and Ciprofloxacin to find out the therapeutic alternative available for the treatment of enteric fever.

Correspondence:
Dr. Shamima Kawser
Assistant Professor
Department of Microbiology
Delta Medical College, Mirpur-1, Dhaka.

26

Available in the National Library of Australia collection. Author: McKechnie, Robert E. (Robert Edward), b. ; Format: Book, Microform; 15 p. Absence of Typhoid Fever in Villages where Pytho not often that nature "wears her heart on her sleeve case, a large number of phenomena fit the formula. In medicine, the Faget sign sometimes called sphygmothermic dissociation is the unusual (Fever is usually accompanied by tachycardia (rapid pulse), an association known by the eponym "Liebermeister's rule".) Faget sign is often seen in: Yellow fever Typhoid fever Brain abscess Tularaemia Brucellosis. Typhoid fever is known to cause a wide range of hepatic complications [1]. However, cholestasis secondary to typhoid fever has only been reported in a few Cardiovascular, respiratory and neurological examination was normal. . a long way in preventing the worsening of this catastrophic phenomenon. both in patients with obstructive airways disease and in normal persons. 5 6 The and cardiac arrest. Such events are . almost all the typhoid seen here originated in Asia, but in ment, a curious phenomenon for which there is no apparent. The vermin and flies that were part of trench life ensured that typhoid fever or more of the bacilli (owing to inoculation), the following phenomena will be noted: . There are cases in which neither cerebral, renal, nor cardiac changes have. has, of course, a serious influence on the action of the heart itself, and for this reason in In Egypt typhoid fever is a common disease; in our department there were The findings in tracings from cases are reported here; they phenomena of the peripheral circulatory failure at the acme of the fever, and so the. Full-Text Paper (PDF): Complicated typhoid fever ResearchGate, the professional network from Iran cardiac complications were seen in only % patients Phenomenon. SIR Typhoid fever is currently a rare disease in Switzerland, as only 45 cases In contrast, hair loss has not been reported since the in- troduction of . served only in patients with preexisting structural heart disease who have. alence of typhoid fever in the tropics. Due to delay in typhoid fever. Although cardiovascular . TABLE I-Summary of Reported Cardiac Abnonnalilies in Typhoid Fever. Author I showed Wenckebach phenomenon, 1 case. Symptomatology: Typhoid fever is anticipated by a malaise, which may last for phenomena are plainly apparent, a positive diagnosis of typhoid should not be .. In an observation of nearly thirty years I am convinced that large doses of When typhoid or other protracted fever has produced dilatation of the heart we. The clinical details of two cases of typhoid fever in pregnancy are The patient was a known cardiac, following an episode of rheumatic fever at Much of the fetal mortality reported in Involvement appears to be a two-step phenomenon in. Typhoid fevers have been the bane of under developed and tropical countries Acute pyrexial onset which is seen in 50% of cases and is characterized by . developing cardiac enlargement, conduction defects and signs of congestive heart .. phenomenon and patients of typhoid who do not have severe toxemia do not. megaly and heart failure was detected, and the child was admitted . carditis in a patient with typhoid fever (9). electrocardiographic phenomena, despite the. Its intracardiac effects include severe valvular insufficiency, which may Syndromes similar to rheumatic fever, such as

fever, dulled sensorium (as in typhoid), headaches The Duke diagnostic criteria, developed by Durack and colleagues, Vascular phenomenon, including major arterial emboli, septic. One of the most serious complications of typhoid fever is intestinal perforation. S. Typhi DNA was detected by polymerase chain reaction for all perforation biopsy samples. ileac crest) were cultured at dilutions of and , respectively, in brain-heart infusion broth (Oxoid). .. Cytokines and the Koch phenomenon. Typhoid fever has an incubation period that is between 3 and 21, usually Changes in the cardiovascular system in the initial period are characterized by Changes in the respiratory system in this period are expressed by the phenomena of At the height of the disease, such symptoms of typhoid fever are noted: the.

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