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Microbiological and clinical features of blood Salmonella infections at a tertiary paediatric care hospital in South India

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Background: Enteric fever is a global health problem but few studies have emphasized on children and adolescents. This study reviews the clinical and laboratory profile, treatment and emerging trends of antimicrobial resistance of pediatric invasive *Salmonella* infections as seen in a large children's hospital in South India

Material/methods: 352 patients with blood cultures positive for *Salmonella* spp. were included in the eight-year (2007-2014) retrospective study. The case records of these patients were screened for demographic and clinical details. Isolates were speciated by conventional biochemical reactions and serotyping was done by slide agglutination. Antimicrobial susceptibility testing was performed by disc diffusion and gradient diffusion, and interpreted according to EUCAST/ BSAC guidelines.

Results: In the present study**,** enteric fever was reported in children and adolescents of all age groups with greater prevalence in school [172(48.9%)] and preschool children [83(23.6%)] with the median age (range) being [6.2 years(23 days-17years)]. Cases were reported throughout the year. The most common serovars were *Salmonella enterica* typhi [285 (80.9%)] and *Salmonella enterica* p*aratyphi A* [62 (17.6%)]. Fever[352(100%)], vomiting[104(29.5%)], diarrhea[58(16.5%)], abdominal pain[53(15.1%)] and hepatomegaly[54(15.3%)] were common clinical features. Other manifestations such as throat congestion, tachycardia, neurological signs, icterus and leucocytosis were also observed. From 2007-2010, among isolates for which ciprofloxacin MIC testing was done, no ciprofloxacin resistance was observed but isolates with reduced susceptibility were reported [73.1%

(57/78) isolates of S.*typhi* and 93.1% (27/29) isolates of *S.paratyphi A*]. High ciprofloxacin resistance was observed in the study period from 2011-2014[98.8% (164/166) isolates of S.*typhi* and 100% (21/21) isolates of *S.paratyphi A*] following use of revised breakpoints for ciprofloxacin. None of the isolates of *S.paratyphi A* were multidrug resistant as against four(1.4%) isolates of *S.typhi*. A 100% susceptibility to third generation cephalosporins and azithromycin was noted. A favorable outcome was seen in 349(99.1%)] cases. Three patients died due to underlying comorbid conditions – acute myeloid leukemia, thalassemia major and sepsis with multiorgan dysfunction.

Conclusions: Enteric fever should be suspected in infants, children and adolescents even in the presence of non-specific clinical manifestations. High fluoroquinolone resistance reported in our study makes them unsuitable choice for empiric/combination therapy of enteric fever. Third generation cephalosporins and azithromycin are rational choices for empiric therapy as 100 % susceptibility was observed in the present study. Multidrug resistance was minimal . However continued surveillance should be done to detect antimicrobial resistance trends in invasive *Salmonella* isolates to optimize treatment. Targeted intervention programs should be focused on age groups with high prevalence namely school and preschool children