

## **Risk Factors for Severe Typhoid Fever in Children: A French Retrospective Study about 78 Cases from 2000-2017 in Six Parisian Hospitals**

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**Abstract :** Background: Typhoid and paratyphoid fever are systemic infections caused by *Salmonella enterica* serovar Typhi or paratyphi (A, B, C). Children traveling to tropical areas are at risk to contract these diseases which can be complicated. Methods: Clinical, biological and bacteriological data were collected from 78 pediatric cases reported between 2000 and 2017 in six Parisian hospitals. Children aged 0 to 18 years old, with a diagnosis of typhoid or paratyphoid fever confirmed by bacteriological exams, were included. Epidemiologic, clinical, biological features and presence of multidrug-resistant (MDR) bacteria or intermediate susceptibility to ciprofloxacin (nalidixic acid resistant) were examined by univariate analysis and by logistic regression analysis to identify risk factors of severe typhoid in children. Results: 84,6% of the children were imported cases of typhoid fever (n=66/78) and 15,4% were autochthonous cases (n=12/78). 89,7% were caused by *S.typhi* (n=70/78) and 12,8% by *S.paratyphi* (n=10/78) including 2 co-infections. 19,2% were intrafamilial cases (n=15/78). Median age at diagnosis was 6,4 years-old [6 months-17,9 years]. 28,2% of the cases were complicated forms (n=22/78): digestive (n=8; 10,3%), neurological (n=7; 9%), pulmonary complications (n=4; 5,1%) and hemophagocytic syndrome (n=4; 5,1%). Only 5% of the children had prior immunization with typhoid non-conjugated vaccine (n=4/78). 28% of the cases (n=22/78) were caused by resistant bacteria. Thrombocytopenia and diagnosis delay was significantly associated with severe infection (p= 0.029 and p=0,01). Complicated forms were more common with MDR (p=0,1) and not statistically associated with a young age or sex in this study. Conclusions: Typhoid and paratyphoid fever are not rare in children back from tropical areas. This multicentric pediatric study seems to show that thrombocytopenia, diagnosis delay, and multidrug resistant bacteria are associated with severe typhoid fever and complicated forms in children.

**Keywords :** antimicrobial resistance, children, *Salmonella enterica typhi* and paratyphi, severe typhoid

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