

PREVALENCE OF *Salmonella paratyphi* A, INFECTIONS IN THE DISTRICT OF COLOMBO: A PRELIMINARY STUDY

S.C. Illapperuma¹, E.M. Corea² and S.B. Agampodi¹

¹Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka, Saliyapura,

²Faculty of Medicine, University of Colombo

Enteric fever is the common name used for both typhoid and paratyphoid fevers. *Salmonella typhi* causes Typhoid fever while *Salmonella paratyphi* A, B and C cause Paratyphoid fever. Enteric fever is highly prevalent globally, and is endemic in developing countries with occasional outbreaks. Sri Lanka recorded 2311, 1794, and 1639 clinical notifications of enteric fever in 2009, 2010 and 2011, respectively, highest numbers being recorded from Jaffna and Colombo districts^{1,2,3}.

Recently there has been a shift in the serotype causing enteric fever from *S. typhi* to *S. paratyphi* A, in most parts of the world⁴ including western province of Sri Lanka⁵. In addition antimicrobial resistance in *S. typhi* and *S. paratyphi* has been reported globally⁶, including Sri Lanka⁷. There are two licensed vaccines against typhoid fever at present but immunity is short lived and regular boosting is required. No vaccine against paratyphoid fever is available.

The study was done to assess the prevalence of *Salmonella* serotypes in cases of enteric fever; to describe their demography, the antibiotic sensitivity pattern of these 74 isolates, and to note their seasonality. This was a retrospective study conducted from February, 2011 to February, 2012 at a private hospital, situated in the Colombo district. The Microbiological laboratory reports of 74 culture positive enteric fever patients were collected. Causative agent, date of isolation, gender, age, and the antibiotic sensitivity testing report were recorded. Ethical clearance was obtained from the ethics review committee of the Faculty of Medicine, University of Colombo.

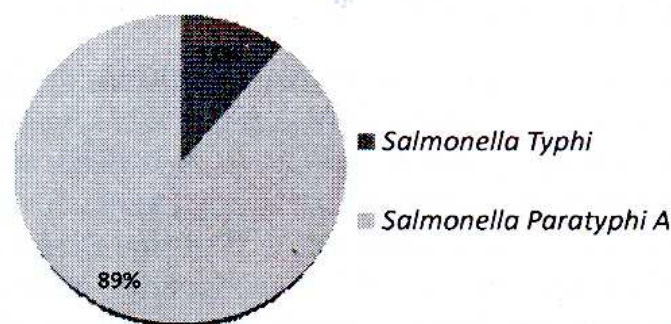


Fig 1 : Aetiology of enteric fever

Among the 74 *Salmonella* species isolated, 66 (89.2%) were confirmed to be *S. enterica* serotype *paratyphi* A, and 8 (12.1%) were confirmed to be *S. enterica* serotype *typhi*. Of the patients 71% were Sinhalese, 13% Tamils, 11.6 Moors, and 4.4% were of other ethnic groups from the total 69 patients. There were 56.8% males and 43.2% females. The ages ranged from 2½ to 72 yrs. The highest number of patients was in the 21-40 age group. Lowest number was reported in 71-80 age group.

Table 1: Antibiotic resistance of *S. typhi* & *S. paratyphi* against currently used antibiotics

Antimicrobial agent	<i>S. typhi</i> Resistant No./Total number tested	% resistance	<i>paratyphi</i> A Resistant No./Total number tested	% resistance
Amoxicillin	0/8	0	0/55	0
Chloramphenicol	0/8	0	0/55	0
Ciprofloxacin	2/8	25	35/55	63.6
Co-trimoxazole	0/5	0	0/55	0
Ceftriaxone	0/8	0	0/54	0
Azithromycin	1/4	25	17/38	44.7
Cefuroxime	nd	-	19/19	100
Co-amoxycylav	0/5	0	0/21	0
Timentin	0/5	0	0/18	0

Even-though enteric fever cases were reported throughout the year, the highest numbers were reported during September to November, 2011, and the predominant isolate being S. paratyphi A.

This study showed an increase in the rate of isolation of *S. paratyphi A*, from cases of enteric fever, similar to the findings in other countries⁴ and in the western province of Sri Lanka⁵. One possible answer to this increase in the Paratyphoid fever could be the unavailability of a vaccine against *S. paratyphi A*. Highest number of culture positives was from 21- 40 age group, which is comparable with a previous Sri Lankan study⁵. From September to November, 2011, there was a high occurrence of *S. paratyphi A* cases, where as a previous study⁵ done in western province showed higher isolation rates from June to December.

Among the *S. paratyphi A* isolates, 63.6% were resistant to ciprofloxacin, in contrast to an earlier report⁷, where it was near 100%. However, the low sensitivity to ciprofloxacin, makes it unsuitable as a first line drug. All *S. paratyphi A* isolates were sensitive to amoxicillin, chloramphenicol, and co-trimoxazole, which is consistent with another Sri Lankan study⁷, and these three antibiotics can still be used as the first line drugs in treatment of enteric fever. Ciprofloxacin resistance was seen in 2/8 *S. Typhi* isolates, and none of the isolates tested were resistant to the other first line drugs. Though chloramphenicol resistance was reported in a previous study⁷, from the western province, the present study showed 100% sensitivity to chloramphenicol by *S. Typhi* isolates tested. Due to the increase in drug resistant strains, blood culture and Antibiotic Sensitivity Testing is recommended in the management of enteric fever.

REFERENCES:

1. Weekly Epidemiological Report, Sri Lanka-2009 ;Vol 36 No. 53 ,Ministry of Healthcare and Nutrition
2. Weekly Epidemiological Report, Sri Lanka-2010 ;Vol 37 No. 52 ,Ministry of Healthcare and Nutrition
3. Weekly Epidemiological Report, Sri Lanka-2011 ;Vol 38 No. 52, Ministry of Healthcare and Nutrition
4. Goh YL, Puthuchery SD, Chaudhry R, et al. Genetic diversity of Salmonella enteric serovar Paratyphi A from different geographical regions of Asia. Journal of Applied Microbiology 2002;92:1167-1171
5. Corea EM, Kamkanamge MC, Jayasinghe WAD, Chandrasiri P, Jayatilleke K, Dassanayake M, Perera J. Epidemiology of enteric fever in colombo and Ragama 2007-2008. Bulletin of Sri Lanka College of Microbiologists. sep 2010; Volume 8:p17
6. Connor BA, Schwartz E. Typhoid and Paratyphoid fever in travelers. Lancet infect Dis. Rev. 2005; 5: 623-28