

WIDAL TITRES AMONG CHILDREN IN A TERTIARY CARE HOSPITALPoornima Shankar¹, Radhana S²**HOW TO CITE THIS ARTICLE:**

Poornima Shankar, Radhana S. "Widal Titers among Children in a Tertiary Care Hospital". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 42, September 08; Page: 10472-10475, DOI: 10.14260/jemds/2014/3365

ABSTRACT: OBJECTIVE: To determine the titers of antibodies against O, H, AH & BH antigens of *S.typhi* & *S. paratyphi* by Widal test over a 1 year study period among children in a tertiary level hospital. **METHODS:** This observational study was conducted in the Pediatric wards of a tertiary hospital at Bangalore, Karnataka from 1st January 2013 to December 31st 2013. Children who presented with a history of fever of \geq 7 days were included in the study. These children underwent a Widal test to rule out typhoid fever. A total of 1197 such patients were included in the study. Children with antibody titers more than 1:160 were considered to have enteric fever. **RESULTS:** Out of the 1197 children, 515 were females & 682 were males. Among females in the age group of <2 yrs, 2-5 years & 5-18 years, the percentage of children with antibody titers <1:80 against the O antigen were 86.15%, 77.78% and 43.89 % respectively. Among males in the age group of <2 years, 2-5 years & 5-18 years, the percentage of children with antibody titers <1:80 against the O antigen were 88.06%, 82.76% & 78.36 %, respectively. Only 6.15%, 7.78% & 6.11% of females in the age group of <2yrs, 2-5 years & 5-18 years had titers against O antigen \geq 1:160. Similarly, 5.97%, 6.9% & 7.41% of males in the age group of <2 years, 2-5 years & 5-18 years had titers against O antigen \geq 1:160. The titers were similar among the males & the females in all the 3 age groups that were studied. **CONCLUSION:** The level of antibody titers may vary with time. The highest level of Widal titers of 1:320 against both O & H antigen were found in 3.08%, 2.22% & 1.67% of females in the age group of <2yrs, 2-5 years & 5-18 yrs. Similarly, 1.49%, 3.45% & 1.4% of males in the age group of <2yrs, 2-5 years & 5-18 years had the highest level of titers of 1: 320 against both antigens . Thus there has been an increase in the level of baseline titers against *Salmonella* species, which needs to be considered while interpreting the results of Widal test for the diagnosis of enteric fever.

INTRODUCTION: The term 'Enteric fever' covers both typhoid & paratyphoid fevers.⁽¹⁾ It is caused by *S. typhi* & *S. Paratyphi* belonging to the family Enterobacteriace. Typhoid & Paratyphoid fevers remain important public health problems globally & major causes of morbidity in the developing world.⁽²⁾

One study 'Typhoid fever & Paratyphoid fever: Systemic review to estimate global morbidity & mortality for 2010' by Geoffrey C Buckle et al, suggests that in 2010, there were an estimated 13.5 million typhoid fever episodes globally & this estimate is comparable to the 2000 crude estimate of 10.8 million episodes published by Crump et al.⁽²⁾

Lab detection methods for enteric fever include serological tests & cultures. The definitive diagnosis is based on the isolation of organisms on culture. Cultures are not easily available in all areas, especially in developing areas, where incidence of enteric fever is high. Its results are also affected by previous antibiotic usage. Although blood cultures remain gold standard for diagnosis, the poor sensitivity of this method has been acknowledged.⁽³⁾ Culture positivity varied from 21-50% in a study 'Enteric fever: a changing perspective' by N Bismai et al.

ORIGINAL ARTICLE

In another study blood culture positivity was reported to be around 41.7%.⁽⁴⁾

Thus serological tests are most commonly used for the diagnosis.

Through this study we are trying to ascertain the antibody titers against O, H, AH, & BH antigens in children with fever of \geq 7 days.

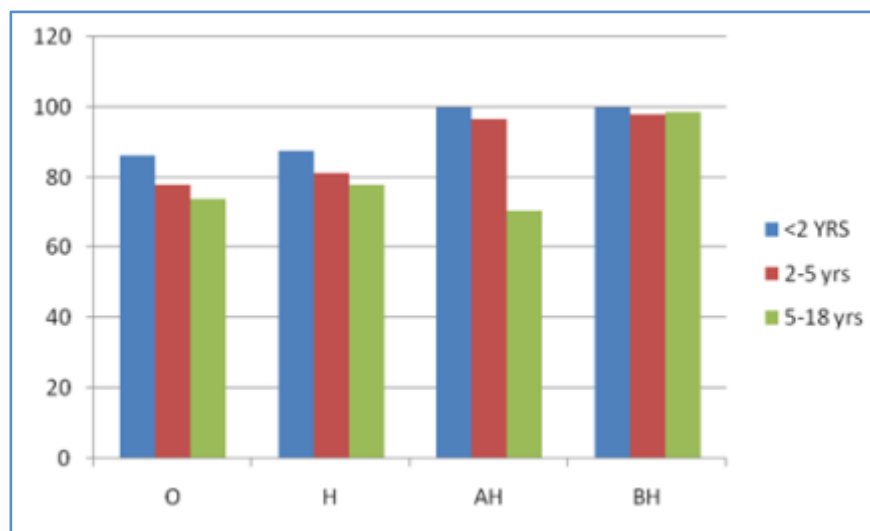
Since the diagnosis based on Widal test, depends on the interpretation of antibody titers, a prior knowledge of the baseline titers among the population is needed, as the titers change with time.

MATERIAL AND METHODS: This observational study was conducted in the Pediatric wards of a tertiary hospital at Bangalore, Karnataka from 1st January 2013 to December 31st 2013.

Children who presented to us with a history of fever of 7 days or more than 7 days were included in the study. Sinclair et al found 1% of cases without fever.⁽⁵⁾ These children underwent a Widal test to rule out typhoid fever. A total of 1197 such patients were included in the study. Children with antibody titers more than 1:160 against O antigen & either one of the other 3 antigens i.e, H/AH/BH were considered to have enteric fever.

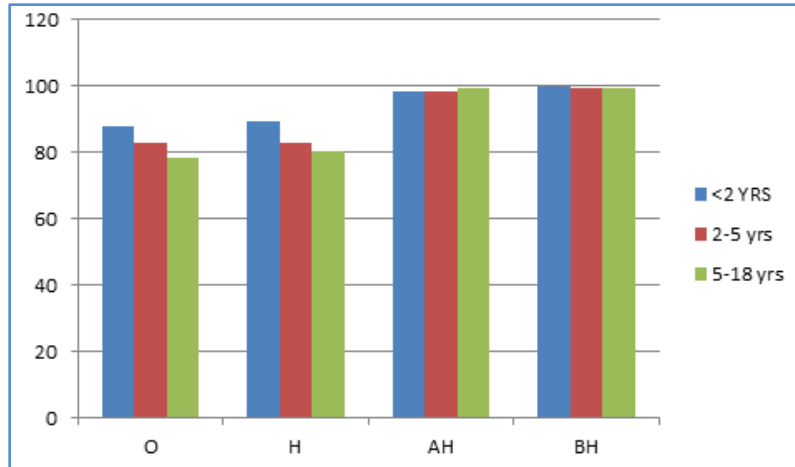
RESULTS: Out of the 1197 children, 515 were females & 682 were males. Among females in the age group of <2yrs, 2-5 yrs & 5-18 yrs, the percentage of children with antibody titers <1:80 against the O antigen were 86.15%, 77.78% & 43.89 %, respectively. Among males in the age group of <2yrs, 2-5 yrs & 5-18 yrs, the percentage of children with antibody titers <1:80 against the O antigen were 88.06%, 82.76% & 78.36 %, respectively.

Only 6.15%, 7.78% & 6.11% of females in the age group of <2yrs, 2-5 yrs & 5-18 yrs had titers against O antigen \geq 1:160. Similarly, 5.97%, 6.9% & 7.41% of females in the age group of <2yrs, 2-5 yrs & 5-18 yrs had titers against O antigen \geq 1:160.

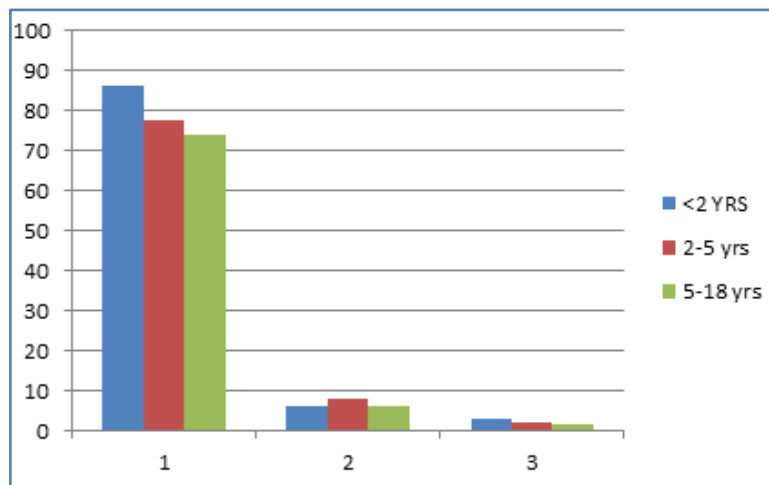


Titres < 1:80 among females

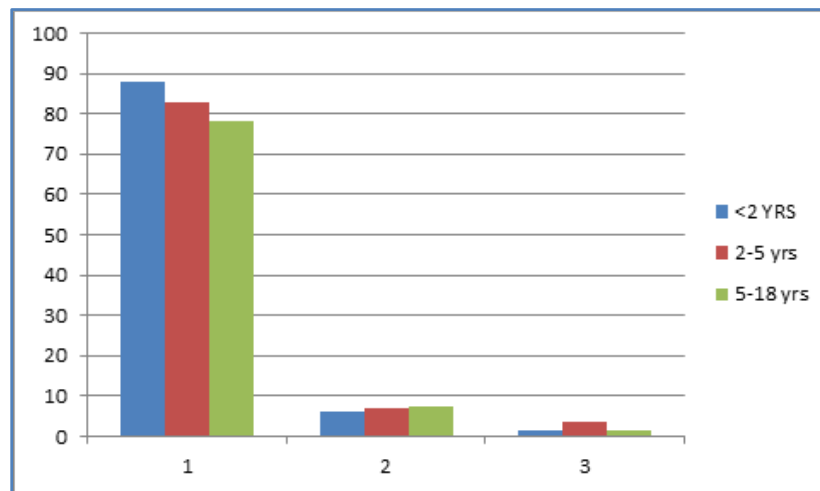
ORIGINAL ARTICLE



Titres < 1:80 among males



Titres against O antigen among females in the 3 age groups



Titers against H antigen among males in the 3 age groups.

ORIGINAL ARTICLE

CONCLUSION: The level of antibody titers may vary with time. In a similar study done Anand M Patil et al⁽⁶⁾ in 2007, the highest level of Widal titer was found up to 1: 40 in the age group of 6 months- 2 yrs for both O & H antigen, whereas it was up to 1:80 in all the other age groups.

The highest level of Widal titers of 1:320 against both O & H antigen was found in 3.08%, 2.22% & 1.67% of females in the age group of <2yrs, 2-5 yrs & 5-18 yrs. Similarly, 1.49%, 3.45% & 1.4% of males in the age group of <2yrs, 2-5 yrs & 5-18 yrs had the highest level of Widal titers of 1:320 against both O & H antigen.

Thus there has been an increase in the level of baseline titers against salmonella species, which needs to be considered while interpreting the results of Widal test for the diagnosis of enteric fever.

REFERENCES:

1. Textbook of Pediatric Infectious Diseases, Jaypee brothers Medical Publishers (P) LTD, p 217.
2. Crump JA, Luby SP, Mintz ED. The global burden of typhoid fever. Bull World Health Organ. 2004; 82: 346-53.
3. Wain j, pham vb, HaV, Nguyen nm, to SD, Walsh AL, et al. Quantitation of bacteria in bone marrow from patients with typhoid fever. Relationship between counts and clinical features .J Clin Microbiol 2001; 39: 1571-6.
4. Pandey KK, Srinivasan S, Mahadevan S, Nalini P Rao. Typhoid fever below 5 years. Indian Pediatr 1990; 27: 153-156.
5. Sinclair S, Choudary VP, Ghai OP, et al. Atypical features of typhoid fever in children. In: Current Topics in Pediatrics. Ed Ghai OP. Bombay, Indian Academy of Pediatrics 1977, pp 134-135.
6. Baseline Widal titres in Healthy children. Anand M Patil, M.L Kulkarni, Akhil M Kulkarni. Indian J Pediatr 2007; 74(12): 1081-1083.

AUTHORS:

1. Poornima Shankar
2. Radhana S.

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of Paediatrics, Kempegowda Institute of Medical Sciences, Bangalore.
2. Post Graduate, Department of Paediatrics, Kempegowda Institute of Medical Sciences, Bangalore.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Radhana S,
25, 1st Cross,
Temple Street,
Coxtown, Jeevanahalli,
Bangalore 560005.
Email: radhana_7@yahoo.com

Date of Submission: 21/08/2014.
Date of Peer Review: 22/08/2014.
Date of Acceptance: 01/09/2014.
Date of Publishing: 06/09/2014.