Baseline Widal Titres in Healthy Children

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ABSTRACT

Objective. To determine the baseline Widal titres in apparently healthy children in Davangere.

Methods. Cross-sectional study was done on 250 children. Widal titers were found using tube agglutination test.

Results. Out of 250, 64.2% had a titre of less than 1:20, 22.4% had a titre equal to 1:20, 9.6% had a titre of 1:40 and 3.6% had a titre of 1:80 to 'O' antigen and 67.2% had a titre of less than 1:20, 21.2% had a titre equal to 1:20, 8% had a titre of 1:40 and 3.6% had a titre of 1:80 to ‘H’ antigen of S. enterica subsp. enterica ser. Typhi. No children in age group 6 months –2 years had a titre of 1:80 to either antigen. All children in this age group had a titre of less than 1:20 to AH antigen and older children had a titre upto 1:40 dilution.

Conclusion. Baseline titres for either S. enterica subsp. enterica ser. Typhi antigen in 6 month –2 year was 1:40 and older children was 1:80. Baseline titres for H antigen of S. enterica subsp. enterica ser. Paratyphi A in 6 month –2 year was less than 1:20 and for older children was 1:40 dilution. [Indian J Pediatr 2007; 74(12) : 1081-1083] E-mail : docsush80@yahoo.co.in

Key words : Baseline Widal titres; Enteric fever; Widal test

Enteric fever is a major endemic health problem among children in India.1,2 The gold standard for diagnosis is isolation of S. enterica subsp. enterica ser. Typhi from bone marrow, blood, stool, or urine. However, in countries like India, isolation of organism is often jeopardized by lack of facilities or inadequate and or improper antibiotic use prior to culture3 and also culture positive cases are very less, time consuming and expensive.4 For these reasons, laboratory diagnosis of enteric fever relies heavily on serological tests such as the Widal test.

In endemic region, interpretation of Widal test depends on knowledge of the baseline titres among healthy population.5 In India sera of proportion of healthy children contain antibodies capable of reacting to a variable titre in Widal test due to previous exposure.5 So Widal test can be used as a diagnostic tool in enteric fever in endemic areas, if we know the baseline titres. These titers can be used as a cut off value to arrive at diagnostic titers.5

In study conducted by Kulkarni et al in 1994, more than a decade ago in Davangere, 50 normal children had anti O titre of <1:20, 1:20, 1:40, 1:80, in 52%, 34%, 10%, 4% respectively and anti H titre of <1:20, 1:20 in 90%, 10% respectively.6

The level of titres detectable in normal population of different areas vary considerably. This variation depends on the degree to which the typhoid is endemic in each area, a fact which may change over time.7 It has been a decade ago since the Widal titres were assessed in healthy children in this part, we found it necessary at this point to update the baseline Widal titres in apparently healthy children of Davangere. These titres can be used as a cut off titre for the diagnosis of typhoid fever.

MATERIALS AND METHODOLOGY

The study was conducted at the department of pediatrics J.J.M. Medical College, Davangere. The subjects included 104 healthy children without symptoms and 146 children with minor illness attending the outpatient department not associated with fever (6 months-15 year). This study was a cross sectional survey.

The Widal tube agglutination test was done on all sera using commercially available antigens containing S. enterica subsp. enterica ser. Typhi O and H antigens and S. enterica subsp. enterica ser. Paratyphi A ‘H’ antigen (SPAN diagnostic private limited). 0.4 ml of two fold serially diluted patients sera (dilution from 1:20 to 1:320) in 0.9%
normal saline was tested by adding an equal volume of antigen. A negative control was included in each batch of the test.

RESULTS

Widal Titres were assessed for ‘O’ and ‘H’ antigen of S. enterica subsp. enterica ser. Typhi and ‘H’ antigen of S. enterica subsp. enterica ser. Paratyphi A.

Table 1 showed that no child in the age group 6 month-2 years showed Widal titre of 1:80 for both O and H antigen and all children showed a titre of <1:20 for AH antigen. In other age groups only a small percentage showed 1:80 titre for O and H antigen of S. enterica subsp. enterica ser. Typhi like 5%, 3%, 6% and only few showed a titre of 1:20 for AH antigen.

These observation were same in healthy children as well as non typhoidal fever cases. Hence, the values were combined and put in one table.

DISCUSSION

Enteric fever still remain a major endemic health problem in India. Isolation of S. enterica subsp. enterica ser. Typhi has remained as the gold standard, however it is well recognized that facilities for culture are not readily available or limited in many areas. Although the culture method is gold standard, it is however time consuming, expensive and the culture positive cases are also very less and hence the best alternative is the Widal Test.

When interpreting the Widal test it is of utmost important that the test be interpreted against the background of normal titre of the population in a particular area. These titres may also vary among the endemic areas and with time. So each country, or region should have the baseline titres of their healthy population which should be updated with time.

In the present study, highest level of Widal titre was found upto 1:80 for both O and H antigen, in all age groups, except in age group 6 month to 2 year the highest level of Widal titre was found upto 1:40 i.e. no titre was found at 1:80 dilution in 6 month to 2 year age for both O and H antigen. 96% had titre equal to or less than 1:40 to O antigen and 96% had titre equal to or less than 1:40 to H antigen.

The results were in agreement with the results obtained by others workers, like Kulkarni et al 1994, for O antigen, but 100% of cases conducted by Kulkarni et al had anti H titre of < 1:20, in contrast to the present study where H antibody titre ≤ 1:20 was in 88.4% only. This may be due to the fact that level of titre in endemic area may vary with time. Few other studies also agree with the