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Prevalence of Widal positivity in a tertiary care hospital in South India

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ABSTRACT

This study was done to investigate the prevalence of Widal positivity in a tertiary care hospital i.e., Bhaskar Medical college and teaching hospital, Moinabad, RangaReddy district, Hyderabad. In developing countries, Widal test is the only practical test available for the diagnosis of enteric fever. The Widal test is easy, inexpensive and relatively noninvasive. It can be of diagnostic value when blood cultures are not available or practical. The Widal test was done for 210 patients and it was positive in 18 cases. The present study reveals that a single Widal test is still a useful diagnostic tool in typhoid fever.

Keywords: Widal test, Typhoid

INTRODUCTION

Typhoid fever is a systemic infection which is caused by the bacterium, *Salmonella enterica*, serotype typhi. This highly adapted, human specific pathogen has evolved remarkable mechanisms for its persistence in its host that help the organism to ensure its survival and transmission. The socio economic impact of the disease is huge, because the typhoid survivors may take several months to recover and to resume work. An early and accurate diagnosis is necessary for a prompt and effective treatment. One has to rely on serological diagnosis, since many diagnostic laboratories in the developing countries, especially in the rural areas, do not have facilities for blood culture and thus the serological diagnosis becomes an important diagnostic tool. The Widal agglutination test usually detects the IgM and Ig G antibodies to *Salmonella typhi* in the patient's serum from the second week of the onset of the symptoms of typhoid fever.

The definitive diagnosis of typhoid fever requires the isolation of *Salmonella typhi* from the blood, feces, urine or other body fluids. In developing countries, facilities for isolation and culture are often not available especially in smaller hospitals, and diagnosis relies up on the clinical features of the disease and the detection of agglutinating antibodies to *Salmonella typhi* by the Widal test[1].

The Widal test has been used very extensively in the serodiagnosis of typhoid fever and, in developing countries, remains the only practical test available[2-6]. Classically, a four fold rise of antibody in paired sera is considered diagnostic of typhoid fever[7]. However, paired sera are often difficult to obtain and specific chemotherapy has to be instituted on the basis of a single Widal test[8].

Even today, the Widal test remains one of the best, easily accessible, cheap and simple method for the diagnosis of typhoid fever.

MATERIALS AND METHODS

This study was conducted in the Department of Microbiology, Bhaskar Medical College , Moinabad, Rangareddy district in Andhra Pradesh.

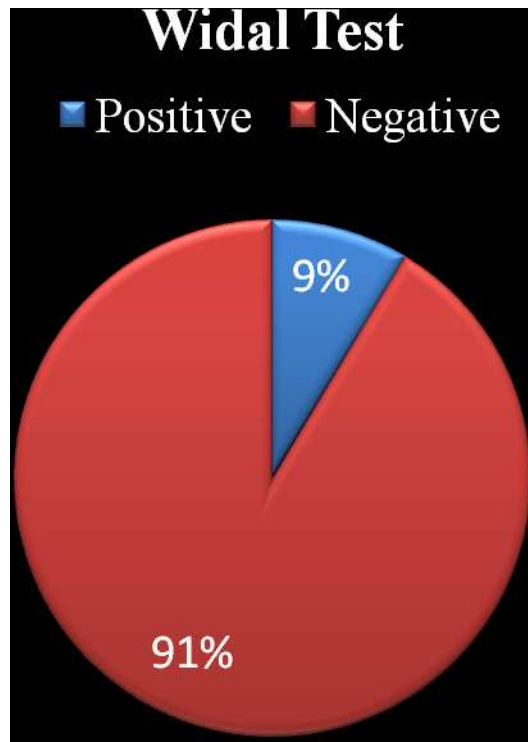
Widal Test :- The Widal test was done in 210 patients with the history of fever and a provisional clinical suspicion of typhoid fever.

The Widal tube agglutination test was done on all sera by the conventional agglutination method[9] using commercially available antigens (SPAN Diagnostic Private Limited). 0.4ml of two fold serially diluted patients sera (dilution from 1:20 to 1:320) in 0.9% normal saline were tested by adding an equal volume of antigen. A negative saline control was included in each batch of the test.

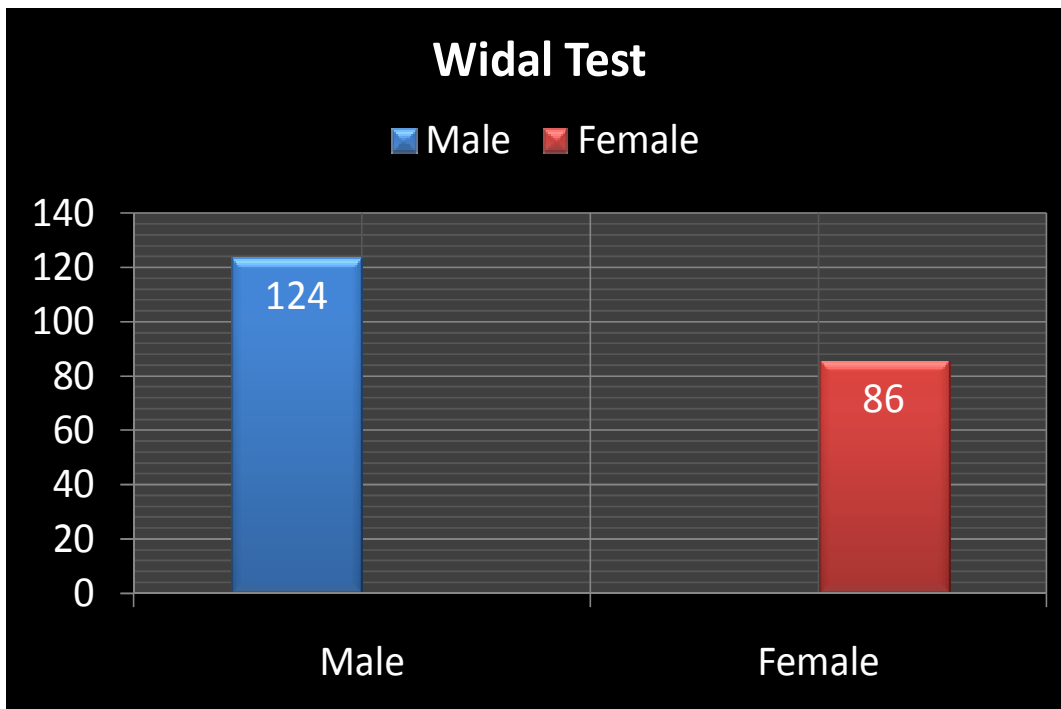
A diagnostic titre of 1:80 suggests positive reaction.

RESULTS

The Widal test was done for 210 patients and it was positive in 18 cases. (8.57%)

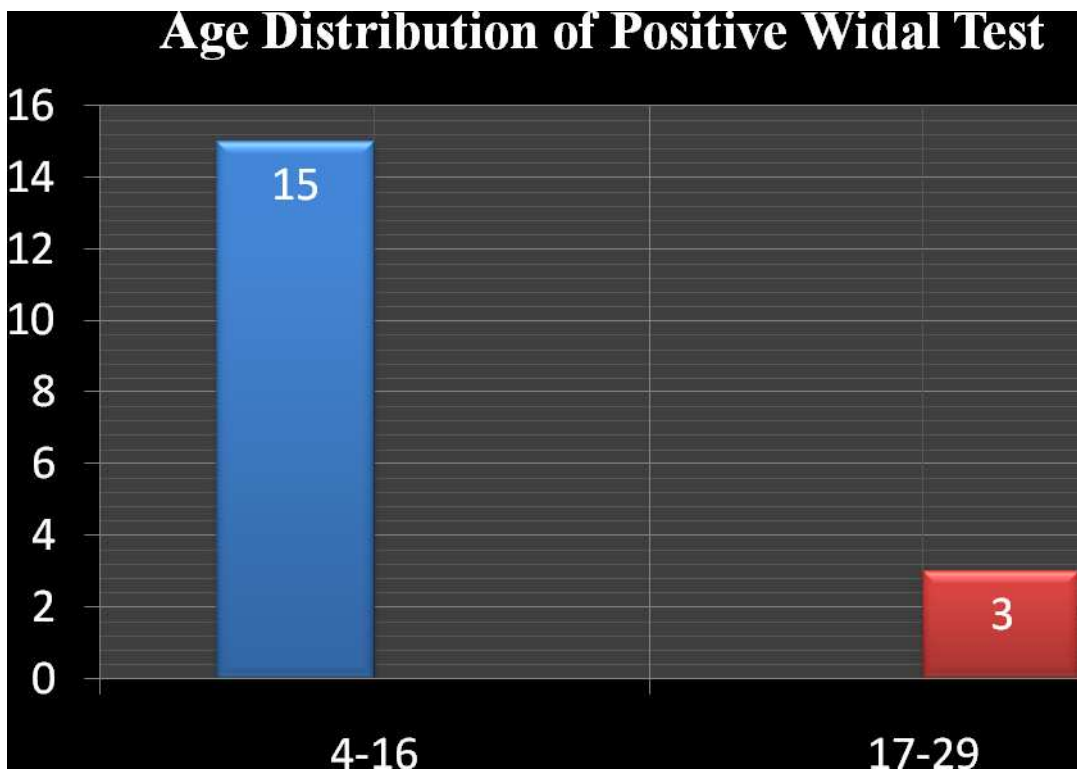


The test was done in 124 males and 86 females



The age distribution of positive Widal cases is as follows :

- 1. In the age group of 4-16 years there are 15 cases positive for Widal test
- 2. In the age group of 17-29 years there are 3 cases positive for Widal test



DISCUSSION

Our study mainly focused on the utility of the Widal test. In a developing country like India, Widal test has been used extensively in the serodiagnosis of typhoid fever. Ideally, in the Widal test, a fourfold rise of the antibody titer in paired sera are often considered as diagnostic of typhoid fever. However, paired sera are often difficult to obtain and as a specific chemotherapy, it has to be instituted on the basis of a single Widal test only. Kulkarni M et al and Rasaily R et al revealed that a single Widal test, in association with relevant clinical findings, can still be used as a useful diagnostic tool for typhoid fever [8].

However, Lateef A et al [10] reviewed the significance of the Widal agglutination test and concluded that its use should not be encouraged in endemic areas.

The Widal test has been used very extensively in the serodiagnosis of typhoid fever and in developing countries, remains the only practical test available.

The serum of a proportion of the population in any region contains antibodies capable of reacting to a variable titer in the Widal test. In the absence of previous inoculation with typhoid or TAB vaccine, the frequency of 'H' agglutinins in a population reflects its experience of Salmonellae with the corresponding antigens-either in the form of enteric fever or of latent infection-and therefore varies widely from country to country and from region to region. The frequency and concentration of 'O' agglutinins on the other hand, vary much less in different parts of the world. Hence, baseline surveys of the seroprevalence of S.typhi 'O' and 'H' antibodies in the general population must be carried out as a guideline for the interpretation of the Widal test [8].

The present study reveals that a single Widal test is still a useful diagnostic tool in typhoid fever.

Researches continue to search for the ideal rapid test to diagnose acute typhoid fever. Several urine assays have been developed but none has proved to upto mark. More sophisticated molecular techniques for diagnosis, such as PCR, are also being studied [1].

CONCLUSION

In conclusion, the widal test is an easy, inexpensive and relatively non invasive test that can be of diagnostic value in situation where blood culture cannot be obtained.

The diagnosis of typhoid fever on an early, single specimen is also of therapeutic value as early diagnosis is vital in typhoid, otherwise if the treatment is delayed it would result in fatal complications such as perforation or haemorrhage of the small bowel. Thus the test can be of diagnostic value in the early stage of the disease and thus help in reducing morbidity and mortality.

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