
ANALYSIS OF WIDAL SLIDE TEST ON TIFOIDFEVER PATIENTS IN SUNDARI MEDAN GENERAL HOSPITAL

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ABSTRACT

Typhoid fever is an acute systemic disease caused by Salmonella typhi and Salmonella paratyphi A, B and C are characterized by prolonged fever, bacteremia without changes in the endothelial system. Salmonella is a genus of gram-negative enterobacteria bacteria in the form of rods, flagellated, without spores, capsules, and anaerobes that cause typhoid and paratyphoid. Salmonella is the leading cause of foodborne illness. In general, Salmonella causes diseases of the digestive organs. Salmonella antigen structure consists of flagellar antigen (H antigen), somatic antigen (O antigen). Widal test is a serological test procedure to detect Salmonella typhi bacteria infection that causes typhoid fever. This test will show the Salmonella antibody reaction to O-somatic, H-flagellar and Vi (bacterial hoops) antigens in the blood. Culture is the gold standard in examining typhoid fever cases to date because in culture we can determine the morphology of Salmonella. This type of research is a descriptive study that aims to analyze the results of the Widal Slide Test with the agglutination method in the Sundari General Hospital Laboratory, Medan. Of the 15 samples analyzed, the results of the Widal Slide Test were obtained for 33% of typhoid fever patients with agglutination and 67% of those without agglutination. The results were Salmonella typhi O = 4 samples, Salmonella typhi H = 1 sample, Salmonella paratyphi AO = 1 sample, Salmonella paratyphi BO = 2 samples, and Salmonella paratyphi CO = 3 samples. This type of research is a descriptive study that aims to analyze the results of the Widal Slide Test with the agglutination method in the Sundari General Hospital Laboratory, Medan. Of the 15 samples analyzed, the results of the Widal Slide Test were obtained for 33% of typhoid fever patients with agglutination and 67% of those without agglutination. The results were Salmonella typhi O = 4 samples, Salmonella typhi H = 1 sample, Salmonella paratyphi AO = 1 sample, Salmonella paratyphi BO = 2 samples, and Salmonella paratyphi CO = 3 samples. This type of research is a descriptive study that aims to analyze the results of the Widal Slide Test with the agglutination method in the Sundari General Hospital Laboratory, Medan. Of the 15 samples analyzed, the results of the Widal Slide Test were obtained for 33% of typhoid fever patients with agglutination and 67% of those without agglutination. The results were Salmonella typhi O = 4 samples, Salmonella typhi H = 1 sample, Salmonella paratyphi AO = 1 sample, Salmonella paratyphi BO = 2 samples, and Salmonella paratyphi CO = 3 samples.

Keywords: *Typhoid Fever , Salmonella sp.,Widal test*

PRELIMINARY

Typhoid fever is an acute systemic disease caused by Salmonella typhi and Salmonella paratyphi A, B and C which is characterized by prolonged fever, bacteremia without changes in the endothelial system. This disease is an infectious disease that can occur in tropical and sub-tropical countries. The clinical manifestations of typhoid fever range from mild (high fever, pulse, weak heart, headache) to complications in the liver and spleen.¹

The number of typhoid fever cases worldwide is estimated at 21 million cases with 128,000 to 161,000 deaths each year, the most cases are in South Asia and Southeast Asia.²

Typhoid fever according to the characteristics of the largest respondents was evenly distributed according to age, but the prevalence of typhoid fever was mostly found at the age of 5-14 years, which was 1.9% and the lowest was in infants at 0.8%.³

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Widal test is a serological test procedure to detect the presence of infection with *Salmonella typhi* and *Salmonella paratyphi* bacteria that cause typhoid fever. This test will show the reaction of *Salmonella* antibodies against O-somatic and H-flagellar antigens in the blood. The Widal test inspection technique can be carried out by the methods of slide test and tube test. The difference is the test tube requires overnight incubation because it requires a more complicated technique. While the Widal launch test only requires an incubation time of 1 minute.⁴

RESEARCH METHODS

This type of research uses a descriptive method which aims to analyze the Widal results at the Sundari General Hospital in Medan.

RESEARCH PLACE

The research was conducted in the laboratory of the Medan Sundari General Hospital

RESEARCH TIME

The time of the research was carried out in April-May 2022.

POPULATION

The population of this study were typhoid fever patients who were hospitalized at the Sundari General Hospital in Medan.

SAMPLE

The sample used in this study was accidental sampling with typhoid fever patients at the Sundari General Hospital Medan

RESULTS AND DISCUSSION

From the results of the Widal Slide Test research on typhoid fever patients conducted on 15 samples examined at the Sundari General Hospital Medan Laboratory, the following results were obtained

Table 4.1 Results of the Widal Slide Test Research on Typhoid Fever Patientsat Sundari General Hospital Medan

No	Sample Code	Results
1	S1	Agglutination occurs
2	S2	Agglutination occurs
3	S3	Agglutination occurs
4	S4	No agglutination occurs
5	S5	No agglutination occurs
6	S6	No agglutination occurs
7	S7	No agglutination occurs
8	S8	No agglutination occurs
9	S9	No agglutination occurs
10	S10	No agglutination occurs
11	S11	Agglutination occurs
12	S12	Agglutination occurs
13	S13	No agglutination occurs
14	S14	No agglutination occurs
15	S15	No agglutination occurs

From the results of the examination listed in Table 4.1. above, the results of the percentage of Widal Slide Test in Typhoid Fever Patients with agglutination occurred were 5 (33%) and 10 (67%) with no agglutination.

Table 4.2 Typhoid Fever Examination Results Agglutination Occurs

No	Sample Code	Results
1	S1	Agglutination occurs
2	S2	Agglutination occurs
3	S3	Agglutination occurs
4	S11	Agglutination occurs
5	S12	Agglutination occurs

$$\frac{\text{Jumlah sampel terjadi aglutinasi}}{\text{Jumlah seluruh sampel}} \times 100$$

$$= \frac{5}{15} \times 100 = 33\%$$

Then the percentage of Widal Slide Test in patients with Typhoid Fever with agglutination was 33% at the Sundari General Hospital, Medan.

Table 4.3 Typhoid Fever Examination Results No Agglutination

No	Sample Code	Results
1	S4	No agglutination occurs
2	S5	No agglutination occurs
3	S6	No agglutination occurs
4	S7	No agglutination occurs
5	S8	No agglutination occurs
6	S9	No agglutination occurs
7	S10	No agglutination occurs
8	S13	No agglutination occurs
9	S14	No agglutination occurs
10	S15	No agglutination occurs

$$= \frac{\text{Jumlah sampel tidak terjadi aglutinasi}}{\text{Jumlah seluruh sampel}} \times 100$$

$$= \frac{10}{15} \times 100 = 67\%$$

Then the percentage of Widal Slise Test in patients with typhoid fever who did not agglutinate was 67% at the Sundari General Hospital, Medan.

Table 4.4 Widal Slide Test Results with Salmonella typhi results

No	Sample Code	Results (S. typhi O / S. typhi H)
1	S1	<i>S. typhi O and H</i>
2	S3	<i>S. typhi O</i>
3	S11	<i>S. typhi O</i>
4	S12	<i>S. typhi O</i>

Based on the results of the examination listed in Table 4.4. above, the percentage of Widal Slide Test results obtained with positive Salmonella typhi O as many as 4 samples (90%) and with positive results for Salmonella typhi H as many as 1 sample (10%).

Table 4.5 Widal Slide Test Results with Salmonella paratyphi results

No	Sample Code	Results (S. paratyphi AH, BH, CH, AO, BO, CO)
1	S1	<i>S. paratyphi AO and CO</i>
2	S2	<i>S. paratyphi BO</i>
3	S3	<i>S. paratyphi Bo and CO</i>
4	S11	<i>S. paratyphi CO</i>

Based on the results of the examination listed in table 4.5. above, the percentage of Widal Slide Test results with positive results for Salmonella paratyphi AO is 1 sample (20%), with positive results for Salmonella paratyphi BO as many as 2 samples (40%) and with positive results for Salmonella paratyphi CO as many as 2 samples (40%).⁵

Based on the results of the Widal Slide Test examination in patients with typhoid fever at the Sundari General Hospital Medan, the results of the study of 15 samples were examined, the results obtained were 5 samples (33%) agglutination and 10 samples (67%). The result was agglutination of 4 samples of

Salmonella typhi O, 1 sample of Salmonella typhi H, 1 sample of Salmonella paratyphi AO. 2 samples of Salmonella paratyphi CO, and 3 samples of Salmonellaparatyphi CO.⁶

The Widal test generally shows positive results on days 5-7 or more after the occurrence of Salmonella enterica serotype typhi bacterial infection. Therefore, if the infection has only lasted a few days, the Widal test results often show negative results and become positive if the examination is repeated a few days later. Thus, a negative Widal test result, especially in the first few days of fever, has not been able to rule out the possibility of typhoid fever.

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