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STUDY OF CO RELATION OF ANTI STREPTOLYSIN-O ANTIBODY TITRE AMONG THE SUSPECTED PATIENTS WITH STREPTOCOCCAL INFECTION AT TERTIARY CARE CENTRE.

Dr. Sachin M. Darji[1*], DR. Sanatkumar T. Sahita[2]

[1*]Assistant professor, M.D. (Microbiology), Microbiology department, GCS Medical College, Ahmedabad, Gujarat, India.
[2]Assistant Professor, MSc., Phd. (Medical Microbiology) Microbiology department, Siddhpur Dental College, and Hospital, Dethali, Siddhpur Patan, Gujarat, India.

***Corresponding Author:** Dr. Sachin M. Darji
[*]Assistant professor, M.D. (Microbiology), Microbiology department, GCS Medical College, Ahmedabad, Gujarat, India.

ABSTRACT

Background: Rheumatic fever (RF) is a common public health concern in India, like other developing countries [1]. Modified Jones major and minor criteria with recently evidence of sore throat caused by group A streptococci which is confirmed by throat culture and sensitivity and superadded with positive streptococcal antigen test and raising in streptococcal antibody titre use for diagnosis of infection with streptococci [2]. However, in some cases of sore throat streptococci can be isolated, so in such cases several antibodies like anti-streptolysin O (ASO) and anti-deoxyribonuclease B (DNase B) are produced in response to group A beta-haemolytic streptococcal infection

Material and method: The study was conducted in the serology laboratory of Microbiology department, samples which are requested for the ASO investigation were received in serology laboratory. ASO testing was done by using Rhelax-ASO slide agglutination test kit from BEACON Diagnostics. Serum was separated out subjecting the specimen for centrifugation at 3000 rpm for 5 minutes after allowing the samples to get fully clotted. Serum then separated out by using micropipette. Total 150 samples were investigated for the Anti-streptolysin O antibody by using above mentioned kit

Result: The 250 serum samples were processed for detection of Anti Streptolysin O antibodies. Total prevalence for ASO positive serum samples were 10 (4%) for Anti Streptolysin O antibodies. In (0-20) years of age group total 120 samples were received, out of these 06 samples were found to be positive for ASO antibody, prevalence rate 5%. In (21-40) years of age group total 85 samples were received, out of these 3 samples were found be positive for ASO antibody, prevalence rate 3.5%. In (41-60) years of age group total 35 samples were received; 01 sample was found to be positive with prevalence rate (2.8%). In more than 60 years of age group total 10 samples were received, no any positivity found in this age group.

Conclusion: The estimation of ASO antibodies is a simple, cost-effective way & test report can be given rapidly and test is correlated with clinical finding for routine diagnostic work. It is useful without depending upon the other test. The prevalence of Anti streptolysin O (ASO) antibody in this study among total cases was 4%. ASO antibody prevalence was higher in age group of (0-20 years).

Key words: ASO (Anti-streptolysin O antibody), Prevalence, Streptococcal infection.

INTRODUCTION

Rheumatic fever (RF) is a common public health concern in India, like other developing countries [1]. Modified Jones major and minor criteria with recently evidence of sore throat caused by group A streptococci which is confirmed by throat culture and sensitivity and superadded with positive streptococcal antigen test and raising in streptococcal antibody titre use for diagnosis of infection with streptococci [2].

However, in some cases of sore throat streptococci can be isolated, so in such cases several antibodies like anti-streptolysin O (ASO) and anti-deoxyribonuclease B (DNase B) are produced in response to group A beta-haemolytic streptococcal infection, Measurement of these antibodies against extracellular antigens of group A beta-haemolytic streptococci is employed to confirm a recent infection [3]. Throat culture is Positive only in about 11% cases at the time of presentation of acute rheumatic fever and presence of streptococci in the throat also indicating carrier state which is seen in 2.5- 35.4% of individuals [4].

The ASO titer may be affected by age, geographical area, frequent streptococcal infection, and nutritional status of children. Beta haemolytic streptococci (*Streptococcus pyogenes*) usually develop different pathogenicity like tonsilitis, pharyngitis, peritonsillar abscess, skin and soft tissue infection like erysipelas, impetigo, scarlet fever, cellulitis, and severe life-threatening infection like necrotising fasciitis and myonecrosis. It can be also associated with non-suppurative complications like acute rheumatic fever, and acute glomerulonephritis.

Streptococcal infections can be diagnosed retrospectively by measuring three different antibodies.

1. The anti-streptolysin O titre (ASO),
2. The anti-deoxyribonuclease-B titre (anti-DNase-B, or ADB),
3. The streptozyme test [5,6]

MATERIAL AND METHODS:

The study was conducted in the serology laboratory of Microbiology department, samples which are requested for the ASO investigation were received in serology laboratory. ASO testing was done by using Rhelax-ASO slide agglutination test kit from BEACON Diagnostics. Serum was separated out subjecting the specimen for centrifugation at 3000 rpm for 5 minutes after allowing the samples to get fully clotted. Serum then separated out by using micropipette. Total 150 samples were investigated for the Anti-streptolysin O antibody by using above mentioned kit. Before subjecting the serum sample for the testing all the reagents of kit brought to room temperature. For processing of sample for detection of Anti streptolysin-O antibody 25µl of serum sample was placed on card provided by manufacture in kit mixed with one drop of ASO latex reagent.

Serum and regent are well mixed by applicator stick. Then card was kept on shaker for 2 minutes for the purpose of well mixing of components. Agglutination was observed on card after completion of shaking for 2 minutes [7,8]. Positive and negative control as provided in kit also processed in same way. If ASO antibody titer between 200 IU/ml to 4000 IU/ml then agglutination appeared on card. Agglutination will not be appeared If ASO antibody are in concentrations less than 200 IU/ml. The ASO titer more than 200 IU/ml was considered significant [9].

RESULTS:

The 250 serum samples were processed for detection of Anti Streptolysin O antibodies. As shown in figure-1, 10 samples were positive and 240 samples were negative. Total prevalence for ASO positive serum samples were 10 (4%) for Anti Streptolysin O antibodies.

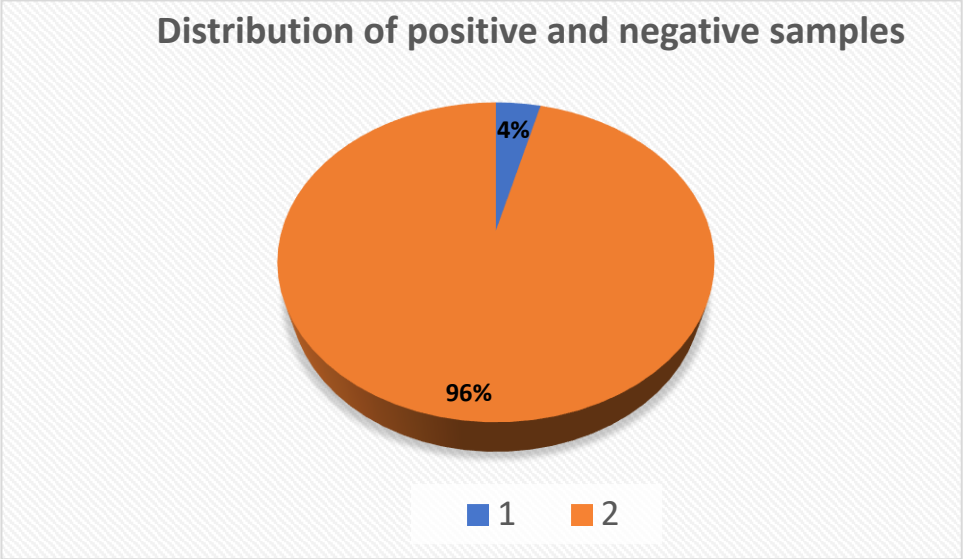

Fig-1: Total No. of ASO positive and negative cases.

Table-1 shows the age wise distribution of Anti-streptolysin O antibody positive cases along with their prevalence rate. In (0-20) years of age group total 120 samples were received, out of these 06 samples were found to be positive for ASO antibody, prevalence rate 5%. In (21-40) years of age group total 85 samples were received, out of these 3 samples were found be positive for ASO antibody, prevalence rate 3.5%. In (41-60) years of age group total 35 samples were received; 01 sample was found to be positive with prevalence rate (2.8%). In more than 60 years of age group total 10 samples were received, no any positivity found in this age group. The highest prevalence of ASO antibody positive samples were 06 samples out of 120 samples (5%) found in age group of (0-20 years). In the age group of 41-60 years positive rate of ASO antibody was very low i.e. 01 sample out of total 35 samples received with prevalence rate 2.8%. this ultimately indicates that prevalence of ASO antibody inversely proportionate to the age of the patient.

Table-1: The number of positive cases in different age group

Age group (years)	No. of samples	No. of Positive	Prevalence
0-20	120	6	5%
21-40	85	3	3.5%
41-60	35	1	2.8%
>60	10	0	0%

DISCUSSION:

Serological test for the detection of Anti-streptolysin O antibody used for the retrospective diagnosis of no suppurative complication caused by streptococci i.e. Acute rheumatic fever and post streptococcal glomerulonephritis [10,11]. In present study 250 serum samples were tested for ASO antibody out of which 10 samples were found to be positive for it with prevalence rate 4% whereas the same study conducted by Sunil Hatkar et al. were the prevalence of ASO antibody positive is 6.03%, which is similar to result of our study [12,]. Whereas the study conducted by Chanchal Yadav et al. the prevalence of ASO antibody titer was 11.3% [13]. In our study highest prevalence of ASO antibody was observed in 0-20 years of age group (5%) followed by 21-40 (3.5%), 41-60 (2.8%). Whereas same study was conducted by Rounak Chahal et al. [15] result are corelating with our study which clearly indicate that the age group and geographical distribution.

CONCLUSION:

The estimation of ASO antibodies is a simple, cost-effective way & test report can be given rapidly and test is correlated with clinical finding for routine diagnostic work. It is useful without depending

upon the other test. The prevalence of Anti streptolysin O (ASO) antibody in this study among total cases was 4%. ASO antibody prevalence was higher in age group of (0-20 years). As the limited data studied in present study which is not enough for making any conclusion on prevalence of ant streptolysin O antibody in particular age so more study required on this topic to draw any conclusion.

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