UTILISATION OF ANTI-STREPTOLYSIN O ANTI-BODY AS SCREENING TEST

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ABSTRACT

BACKGROUND
Streptococci produce two haemolysins, Streptolysin ‘O’ and ‘S’. Estimation of antibody (ASO titre) to Streptolysin ‘O’ is a standard serological procedure for the retrospective diagnosis of infection with Streptococcus pyogenes. The purpose of our study was to screen patients for presence of ASO, which would aid in the diagnosis of streptococcal infections.

MATERIALS AND METHODS
The study was carried for three months in a tertiary care centre; 84 clinically diagnosed cases of streptococcal infections and its sequelae were chosen. Blood samples were collected from these patients and sent to the laboratory for detection of ASO titres. The test kits used were IMMUNSTAR (LATEX SLIDE TEST) by Star Diagnostics Pvt. Ltd, Mumbai, India.

RESULTS
Out of 84 samples tested, we obtained 17 (20.23%) positive samples in our study. Paediatric (14 samples - 82.35%) and female population (11 samples - 64.70%) outnumbered in positivity.

DISCUSSION
ASO titres have been used almost exclusively for epidemiological studies and the clinical diagnosis of S. pyogenes infection and its sequelae such as rheumatic fever, glomerulonephritis and reactive arthritis after throat infections. Our study reports findings which are in agreement with the results quoted in literature.

CONCLUSION
Determination of ASO in patients is a useful tool for co-relation with the diagnosis of streptococcal infections.

KEYWORDS
Anti-Streptolysin O (ASO), Streptococcal Infections.


FINANCIAL OR OTHER COMPETING INTEREST: None.

Table 1. Distribution of Total Samples

<table>
<thead>
<tr>
<th></th>
<th>Positive samples</th>
<th>Negative samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>84</td>
<td>67</td>
</tr>
</tbody>
</table>

Table 2. Age-Wise and Sex-Wise Distribution of Positive Samples

<table>
<thead>
<tr>
<th></th>
<th>Paediatric Population</th>
<th>Adult Population</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>6</td>
<td>-</td>
<td>6 (35.29%)</td>
</tr>
<tr>
<td>Females</td>
<td>8</td>
<td>3</td>
<td>11 (64.70%)</td>
</tr>
<tr>
<td>Total</td>
<td>14 (82.35%)</td>
<td>3 (17.64%)</td>
<td>17</td>
</tr>
</tbody>
</table>
Table 1 shows that we obtained 17 (20.23%) positive samples in our study.

Table 2 shows the age and sex-wise pattern noticed in these positive samples. The paediatric (14 samples - 82.35%) and female population (11 samples - 64.70%) have outnumbered their adult and male counterparts respectively.

**DISCUSSION**

Streptolysin 'O' is an exotoxin that repels leucocytes and disrupts their membrane by pore forming or enzymatic attack on phospholipids. It is produced by Group A, C and G streptococci and *Streptococcus canis*. The streptolysin 'O' of *S. pyogenes* is within 90% genetic homology to the streptolysin S of *S. canis* and of group C streptococci.[4]

In the infectious disease literature, ASO titres have been used almost exclusively for epidemiological studies and the clinical diagnosis of *S. pyogenes* infection[5-8] and its sequelae such as rheumatic fever, glomerulonephritis and reactive arthritis after throat infections.[7-9] Gray et al showed that a single ASO titre greater than 400 U/mL correlated with a sensitivity of 66% and specificity of 82% with upper respiratory tract infections due to *S. pyogenes* in adults.[6] According to the rheumatology literature, ASO titres may be elevated in non-infectious arthritis[9] and sacroiliac joint disorders in genetically susceptible patients.[10] β-haemolytic streptococci may trigger reactive arthritis as well as rheumatic fever.[9]

Our study reports similar findings where we detected ASO in 82.35% of paediatric patients and 17.64% of adult patients. This could be the result of streptococcal infection or its sequelae. Presence of ASO in paediatric patients points towards the possibility of upper respiratory tract infections due to *S. pyogenes* or rheumatic fever. Various studies conducted have reported the usefulness of ASO titre in the diagnosis of rheumatic fever[11] and acute tonsillitis,[12] while its presence in adult population is usually indicative of other sequelae as reactive arthritis. Utility of ASO in the diagnosis of orthopaedic infections has also been reported.[13]

Consequently, the distinction between reactive disease and pyogenic infections has to be made clinically.

Limitations of our study include lack of ASO titre determination. Nevertheless, reporting presence of ASO definitely aided in the diagnosis of patients. ASO titre determination is relatively inexpensive and accurate in the diagnosis of β-haemolytic groups A, C and G streptococci.

Therefore, in patients with a compatible clinical presentation, negative culture results and a positive result from titre evaluation, antibiotics might be reduced to the narrowest but highly active spectrum, i.e. penicillin.

**CONCLUSION**

Determination of ASO in patients is a useful tool for co-relation with diagnosis of streptococcal infections.

**REFERENCES**