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ORIGINAL RESEARCH ARTICLE

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EFFECT OF TONSILLECTOMY ON ASO TITRE

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ABSTRACT

Background: Tonsillitis is one of the common clinical problems in Otolaryngology practice. Tonsillectomy is the preferable treatment for patients not responding to medical treatment. Many patients have increased Antistreptolysin O (ASO) titres which is caused by Group A Beta Haemolytic Streptococci (GABHS).
Objectives: To determine the effect of tonsillectomy on ASO titre.
Materials and Methods: A prospective study conducted in the Department of Otorhinolaryngology, Regional Institute of Medical Sciences, Imphal, Manipur, India for a period of 2 years from October 2014 to September 2016. 50 patients diagnosed as recurrent tonsillitis with raised ASO titre above 200 IU/ml and undergoing tonsillectomy were enrolled for the study.
Results: Most of the patients were in the age group of 11-15 years with male to female ratio of 1: 1.63. One month after tonsillectomy 11 (22%) patients were negative for ASO titre. After 3 months, 6 months and 1 year follow up, patients whose ASO titre became negative were 34 (68%), 44 (88%) and 45 (90%) respectively. 72% patients had no episodes of sore throat after tonsillectomy.
Conclusion: Tonsillectomy has a significant role in preventing or reducing recurrent streptococcal throat infections.

KEYWORDS: Tonsillectomy, ASO titre, Sore throat, Tonsillitis.

INTRODUCTION

Tonsillitis is one of the most common manifestation of the upper respiratory tract infections. It is common in children and to a lesser extent in the older age group. The life time prevalence of recurrent tonsillitis is 11.7% with significant predominance in female cases. [1] GABHS is the most common bacteria that cause acute tonsillitis. [2] It is the only organism which gives rise to systemic complication in the form of rheumatic heart disease, glomerulonephritis, arthritis, eye diseases etc. An infection with GABHS in the human body produces different toxins; Streptolysin O is one of them and antigenic in nature. As a normal immunological response, antibodies against it i.e. Anti-Streptolysin O, are detected in the serum after Group A Streptococcal infection. [3] A raised ASO titre level is one of the most relevant retrospective serological indices of antecedent GABHS infection. [2] A single titre of more than 200 IU/ml is considered as a raised value. [4]

Tonsillectomy has a significant role in preventing recurrent streptococcal infections as failures with antibiotic treatment is frequent and attributed mainly to poor compliance, antibiotic resistance, untreated close contacts, carrier state and antibiotic related or co-pathogenic suppression of host immunity and the necessary flora.5 Therefore this study was conducted to evaluate the effect of tonsillectomy on ASO titre.

MATERIALS AND METHODS

A prospective study was conducted in the Department of Otorhinolaryngology, Regional Institute of Medical Sciences, Imphal, Manipur, India for a period of 2 years from October 2014 to September 2016 after obtaining approval from Institutional Ethics Committee.

A total of 50 patients regardless of age and sex who were clinically diagnosed as recurrent tonsillitis with raised ASO titre above 200 IU/ml and undergoing tonsillectomy were included. Patients unwilling to give informed written consent, those having acute tonsillitis, bleeding diathesis, other acute upper respiratory tract infections, and uncontrolled systemic diseases were excluded from the study. Informed written consent was obtained from all the patients. All the patient underwent tonsillectomy under general anaesthesia and were followed up for 1 year. Estimation of ASO titre was done at 1 month, 3 months, 6 months and 1-year post-surgery. The data obtained were analysed using SPSS software version 21.0 (IBM Corp., Armonk, NY, USA).

RESULTS

In the present study, 50 patients with recurrent tonsillitis fulfilling the inclusion and exclusion criteria were studied.

The age group of the patients studied ranged from 6 to 20 years, with majority of the patients in the age range of 11 to 15 years (46%). Females (62%) were more affected than males with a male to female ratio of 1: 1.63.

All the patients presented with sore throat. More than half of the patients (52%) had sore throat for 7 to 9 episodes per year before tonsillectomy (Table 1).

No of episodes	No of patients
>9	13
7-9	26
<7	11

Table 1: *(Number of episodes of sore throat before tonsillectomy (N=50))*

31 patients (62%) had dysphagia before tonsillectomy while 19 patients (38%) did not had any dysphagia. All the patients (100%) had anterior pillar flushing and tonsillar hypertrophy on examination. On grading of tonsillar hypertrophy, grade 3+ was the most commonly observed (17 patients) followed by grade 2+ (Table 2).

Grades	No. of patients
0+	2
1+	9
2+	14
3+	17
4+	8

Table 2: *(Distribution of respondents by presence of grading of tonsillar hypertrophy (N=50))*

11 (22%) patients were negative for ASO titre after 1 month of tonsillectomy but was not statistically significant. After 3 months, 6 months and 1 year follow up, patients whose ASO titre became negative were 34 (68%), 44 (88%) and 45 (90%) respectively. The reduction in ASO titre was found to be statistically significant from the third month post-operatively ($p < 0.001$) (Table 3).

Negative ASO Titre	1-month Post op	3-month Post op	6-month Post op	1-year Post op
Number	11	34	44	45
Percentage (%)	22	68	88	90
P value	0.12	<0.001	<0.001	<0.001

Table 3: *(ASO titre after tonsillectomy (N=50))*

36 (72%) of patients had no sore throat after tonsillectomy during one year follow up period and was found to be statistically significant ($p < 0.001$) (Table 4).

No. of attacks of sore throat	No. of patients	Percentage
One	8	16
Two	6	12
Nil	36	72

Table 4: *(Number of episodes of sore throat after tonsillectomy during 1 year follow up period (N=50))*

DISCUSSION

In the present study maximum patients (46%) were in the age range from 11 to 15 years. This finding was in contrast to the finding of study conducted by Viswanathan N et al [2] where majority of the patients of recurrent tonsillitis were from the age group of 6 to 10 years. Also, in the study conducted by Elmagd EAA et al [6], all the cases of chronic tonsillitis with raised ASO titre was under the age of 14 years. While in the present study there were 6 patients above the age of 15 years. The male to female ratio was found to be 1: 1.63. Mohammad MS [7] in his study concluded that the gender was of no value as a risk factor in increasing or decreasing the prevalence rates of infection with GABHS.

This study, which was aimed at the efficacy of tonsillectomy, showed a significant reduction in ASO titre after tonsillectomy. One month after tonsillectomy 11 (22%) patients were negative for ASO titre. However, this was not statistically significant ($p = 0.12$). After 3 months, 6 months and 1 year follow up, patients whose ASO titre became negative were 34 (68%), 44 (88%) and 45 (90%) respectively and was

statistically significant. Thus, there was a marked reduction in the ASO titre level from third month onwards after tonsillectomy and continued to remain negative at 6 months and 1 year in a statistically significant level, in 90% of patients. These results are in line with the findings in the study conducted by Viswanathan et al [2]. Fujikawa S et al [8] also showed that cases with high ASO titre were considered to have an indicative factor for tonsillectomy. However, in the study conducted by Robert S et al [9] it was concluded that streptococcal infections occurred less frequently in tonsillectomies individuals if only clinical and bacteriological data were considered. When the serologic data were considered, previous tonsillectomy did not alter the susceptibility to infection with GABHS.

In this study it was found that 72% patients had no episodes of sore throat after tonsillectomy which was statistically significant ($p < 0.001$). Motanoski GM [10] in his study showed that patients who had undergone surgery had lower infection rate with GABHS. Lock C et al [11] in their study compared the cost effectiveness and clinical effectiveness of tonsillectomy with standard non-surgical management in patients with recurrent sore throat. They found that there were less episodes of sore throat in patients with tonsillectomy than in patients with medical management.

Chronic tonsillitis is one of the common clinical problems in Otolaryngology practice. Streptococcus is one of the main organisms responsible for this. Rheumatic fever is one of the complications of streptococcal tonsillitis and it constitutes 25 - 40% of cardiovascular diseases in third world countries. This underscores the importance of early detection of streptococcal throat infection and effective intervention. Throat swab culture was positive in 80% of streptococcal infections. But most often it is negative in chronic tonsillitis. Antigen detection test is very sensitive, but it is very costly and not available in all centres. ASO titre test is the most widely used test. It is more popular because of its availability in our country, less cost and reasonable sensitivity [2].

In the present study, since in more than 90% of patients the ASO titre remained negative during the one year after tonsillectomy, it can be assumed that there had not been any streptococcal throat infection in these patients during the period. This can be because the tonsils had been removed.

CONCLUSION

In 90% of patients the ASO titre remained negative during 1 year follow up. Also, there was significant reduction in sore throat in the 1 year follow up. Thus, it can be concluded that tonsillectomy has a significant role in preventing or reducing recurrent streptococcal throat infections.

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