Original Research Article

DOI: http://dx.doi.org/10.18203/issn.2454-5929.ijohns20195703

Clinical correlation between tonsillar hypertrophy and tonsillitis

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Received: 06 September 2019 **Revised:** 10 November 2019 **Accepted:** 14 November 2019

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ABSTRACT

Background: Tonsillar hypertrophy is a common clinical condition seen by an otorhinolaryngologist. Tonsils undergo hypertrophy due to recurrent infection or as a part of generalized lymphoid hypertrophy. The aim of this study is to clinically correlate the association between tonsillar hypertrophy and acute/chronic tonsillitis.

Methods: 100 patients attending the Oto-Rhino-Laryngology Department at Vijayanagar Institute of Medical Sciences, Ballari, Karnataka with complaints of tonsillitis acute, chronic, acute on chronic, other ENT symptoms and asymptomatic patients were assessed for tonsillar enlargement using Brodsky Tonsillar Grading scale for tonsillar hypertrophy.

Results: Out of the 100 patients with tonsillar enlargement and the symptoms at presentation we observed a statistically significant (p=0.0001) irrespective of the severity of the infection to the tonsillar hypertrophy graded according to Brodsky tonsillar grade.

Conclusions: It is a common prudence that most of the general public and majority of general physicians are of the opinion that tonsillar grades are related to clinical pathology. Our study reveals tonsillar hypertrophy and severity of clinical disease are not directly proportional hence our study indicates management of acute or chronic tonsillitis cannot be influenced by the grade of tonsillar enlargement. We can consider tonsillar enlargement as a guide for prognostic evaluation. We were unable to find any literature regarding our objective of study. Hence this study can be considered as a stepping stone for further in depth clinical studies.

Keywords: Tonsillitis, Tonsillar hypertrophy, Tonsillar grade

INTRODUCTION

Tonsillar hypertrophy is a common clinical condition seen by an Otorhinolaryngologist. Tonsils undergo hypertrophy due to recurrent infection or as a part of generalized lymphoid hypertrophy.¹

Palatine tonsils are part of the Waldeyer's lymphatic ring, responsible for the first line of defense against pathogens because it is located at the entrance of the air and digestive tracts.²

The lymphatic ring is also composed of the pharyngeal, lingual and torus tubarius tonsils, and the lymphatic tissue scattered throughout the posterior oropharyngeal wall, with the function of collecting antigenic information.²

The lymphatic tissue is not usually apparent in early childhood, but gradually evolves with hypertrophy and hyperplasia and reaches its largest size between 2 and 5 years of age. Its involution, which has unknown cause, starts at puberty. In adulthood, there is only a small amount of lymphatic tissue remaining.²

The full role the ring plays in human physiology and immunology and its effects on the immune system both local and systemic are not yet completely understood.²

Enlargement of the palatine tonsils is associated with substantial ill health consequences in the paediatric population. These include swallowing difficulties, pain and/or discomfort, airflow limitation, and obstructive sleep apnea (OSA). The ability to reliably assess and monitor tonsil size is therefore necessary in clinical settings. Treatment for tonsillar disease is carried out by administration of antibiotics or performance of tonsillectomy.

The aim of this study is to clinically correlate the association between tonsillar hypertrophy and acute/chronic tonsillitis.

METHODS

Data collected prospectively to objectively evaluate the association of four grades of tonsillar hypertrophy with clinically diagnosed acute and chronic tonsillitis from 100 patients who attended the Oto-Rhino-Laryngology Department over a period of one year from February 2018 to January 2019, at Vijayanagar Institute of Medical Sciences, Ballari, Karnataka. This study was approved by institutional ethical committee. Informed written consent was taken from all the participating patients.

Inclusion criteria

All the patients between the age group of 5-40 years attending the Department of Otorhinolaryngology, VIMS,

Ballari, presenting with throat pain and difficulty in swallowing/breathing with or without fever were examined.

Exclusion criteria

Unilateral tonsillar swelling, peritonsillar and tonsillar abscess and suspected cases of malignancy were excluded from our study.

These patient with tonsillar enlargement were evaluated clinically, by oral examination and assessing the tonsillar grading based on Brodsky classification of tonsillar enlargement.

An oropharyngeal examination, including a subjective evaluation of tonsil size, is a simple task for a general physician. However, tonsil evaluation is based on the free pharyngeal airway space rather than the tonsil's volume itself, and theoretically this evaluation might be influenced by structural variations in the components of the lateral pharyngeal wall. In a recent study of children, a good correlation was observed between subjective tonsil size and objective tonsil volume.⁸

Various tonsillar grading systems are used to grade palatine tonsils like Brodsky tonsillar grading scale, druginduced sleep endoscopy (DISE) to assess lateral pharyngeal wall ortonsillar obstruction and Friedman Classification of tonsillar enlargement.

Brodsky tonsillar grading scale was used in our study.

Table 1: Brodsky grading scale.^{4,5}

Grade 0 (tonsils within the tonsillar fossa),

Grade 1 (tonsils just outside the tonsillar fossa and occupy < 25% of the oropharyngeal width),

Grade 2 (tonsils occupy 26-50% of the oropharyngeal width),

Grade 3 (tonsils occupy 51-75% of the oropharyngeal width), and

Grade 4 (tonsils occupy >75% of the oropharyngeal width).^{4,5}

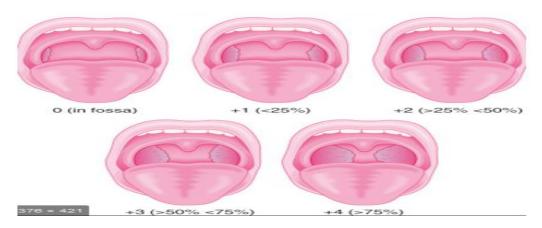


Figure 1: Brodsky tonsillar grading.

Source: Hannallah RS, Brown KA, Verghese ST; 33-Otorhinolaryngologic Procedures; A Practice of Anesthesia for Infants and Children (Sixth Edition) 2019, Pages 754-789.e9.

Table 2: DISE grading scale.4-6

0=No obstruction	
1=0-50% lateral obstruction	
2=50-99% lateral obstruction	
3=Complete obstruction.	

Table 3: Friedman classification of tonsillar enlargement.⁷

Tonsil size 1 implies tonsils hidden within the pillars					
Tonsil size 2 implies tonsils extending to the pillars					
Tonsil size 3 implies beyond the pillars but not the midline,					
Tonsil size 4 implies tonsils extend to the midline. ⁷					

RESULTS

A prospective study was conducted on 100 patients attending the Department of Otorhinolaryngology with complaints of throat pain, difficulty in swallowing, with or without fever and other ENT complaints like nasal obstruction or discharge, earache or discharge or any other, headache or heaviness or giddiness or tinnitus or any other complaints. The patient's age ranged from 4-40 years with mean age of the patients was 14.77 years. Minimum age being 4 years and maximum age was 40 years. Maximum patients were in the age group 1-10 years (45%) followed by 11-20 years (35%). Among 100 patients females patients were 47 (47%) and male patients were 53 (53%). Maximum number of male patients were in the age group 1-10 years (53%) maximum number of female patients were in the age group 21-30 years (80%) thus female to male ratio is 1.12:1.

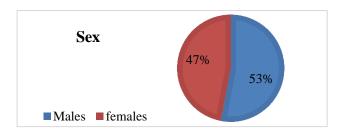


Figure 2: Sex ratio distribution.

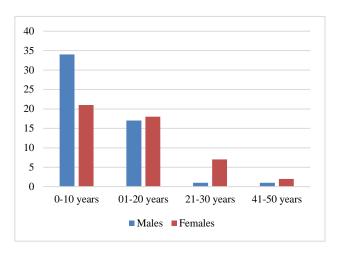


Figure 3: Age group distibution.

The presenting complaints of all the patients were considered with 80 patients having throat pain, 76 patients having difficulty in swallowing, 2 patients with difficulty in breathing, 9 patients had snoring complaints and 8 patients had history of mouth breathing. 65 patients had fever on presentation and 1 patient had fever with chills. 20 patients presented with other ENT complaints. 3 patients complained of nasal obstruction or discharge, 14 patients had ear discharge or ache, 1 patient had complaints of headache and 2 patients with foreign body in aero-digestive tract.

Table 4: Female patients with tonsillar grades.

Brodsky grade	Acute	Chronic	Acute on chronic	Other ENT complaints	Asymptomatic	Total
I	6	2	0	2	0	10
II	2	2	7	2	1	14
III	5	2	6	4	0	17
IV	3	1	1	1	0	6
Total	16	7	14	9	1	47

According to Brodsky grading of tonsillar enlargement the patients were graded accordingly. 10 (10%) patients with grade I, 41 (41%) patients with grade II and 41 (41%) patients with grade III and 8 (8%) patients with grade IV tonsillar enlargement, more females patients

were observed in grade I and grade IV tonsillar enlargement of acute onset. Maximum patients were in acute on chronic 36 (36%) followed by acute 25 (25%), other ENT complaints 20 (20%), chronic 17 (17%) and asymptomatic in 2 (2%). There was no statistically

significant p value observed among the males and females (p=0.002 and p=0.01) with respect to the tonsillar enlargement grades but there was a statistically

significant observation, p=0.0001 irrespective of the tonsillar enlargement to the severity of the infection on presentation.

Table 5: Male patients with tonsillar grades.

Brodsky grade	Acute	Chronic	Acute on chronic	Other ENT complaints	Asymptomatic	Total
I	0	0	0	0	0	0
II	6	2	8	10	1	27
III	3	7	13	1	0	24
IV	0	1	1	0	0	2
Total	9	10	22	11	1	53

Table 6: Total patients with tonsillar grades.

Brodsky grade	Acute	Chronic	Acute on chronic	Other ENT complaints	Asymptomatic	Total
I	6	2	0	2	0	10
II	8	4	15	12	2	41
Ш	8	9	19	5	0	41
IV	3	2	2	1	0	8
Total	25	17	36	20	2	100

DISCUSSION

Tonsillar hypertrophy is a common clinical condition seen by an Otorhinolaryngologist. Tonsils undergo hypertrophy due to recurrent infection or as a part of generalized lymphoid hypertrophy.¹

Palatine tonsils are part of the Waldeyer's lymphatic ring, responsible for the first line of defense against pathogens because it is located at the entrance of the air and digestive tracts.²

The lymphatic ring is also composed of the pharyngeal, lingual and torus tubarius tonsils, and the lymphatic tissue scattered throughout the posterior oropharyngeal wall, with the function of collecting antigenic information.²

The lymphatic tissue is not usually apparent in early childhood, but gradually evolves with hypertrophy and hyperplasia and reaches its largest size between 2 and 5 years of age. Its involution, which has unknown cause, starts at puberty. In adulthood, there is only a small amount of lymphatic tissue remaining.²

Enlargement of the palatine tonsils is associated with substantial ill health consequences in the paediatric population. These include swallowing difficulties, pain and/or discomfort, airflow limitation, and OSA. The ability to reliably assess and monitor tonsil size is therefore necessary in clinical settings.³

Treatment for tonsillar disease is carried out by administration of antibiotics or performance of tonsillectomy.

Brodsky tonsillar grading scale was used in our study.





Grade III



Grade II



Grade IV

Figure 4: Clinical photographs indicating the various grades of tonsillar enlargement.

It is a common prudence that most of the general public and majority of general physicians are of the opinion that tonsillar grades are related to clinical pathology. We presume higher tonsillar grade implies severe infection or inflammation, this was the basis to take up this study and scientifically establish or reject the common notion.

Our study indicates the various spectrum of clinical presentation like acute, chronic, acute on chronic, other ENT symptoms and asymptomatic can be associated with any of the four tonsillar gradings. To emphasize this indicated grade I and grade IV tonsillar enlargement were associated with the above mentioned clinical

presentations with no propensity for lesser in grade I or more in grade IV tonsillar enlargement.

In a study by Venkatesha et al, there was a mild positive correlation between intraoral tonsil volume and clinical grading in patients with recurrent tonsillitis done on 25 patients and there was no correlation with BMI and neck circumference with clinical grading of the tonsils. In a study by Reis et al, in 46 patients operated for recurrent tonsillitis and tonsillar hyperplasia a clinical histological correlation found more than six germinal centres per field at 100x magnification as the sole criterion to differentiate tonsillar hypertrophy from recurrent tonsillitis.² Miller et al in 154 paediatric patients found a positive correlation between Brodsky grading and DISE lateral pharyngeal wall score majority of children with sleep disordered breathing with Brodsky grade I did not demonstrate lateral pharyngeal wall obstruction suggesting tonsillectomy alone was not sufficient at treating OSA in patients with small tonsils⁹. In another study by Li et al in a study conducted on 35 patients with suspected sleep apnoea concluded tonsillar hypertrophy assessed by lateral neck radiograph correlates positively with the severity of obstructive sleep apnoea.10

We were unable to find any literature regarding our objective of study. Hence this study can be considered as a stepping stone for further in depth clinical studies.

Our study indicates management of acute or chronic tonsillitis cannot be influenced by the grade of tonsillar enlargement. We can consider tonsillar enlargement as a guide for prognostic evaluation.

CONCLUSION

Tonsillar hypertrophy is a common clinical condition seen by an Otorhinolaryngologist. Tonsils undergo hypertrophy due to recurrent infection or as a part of generalized lymphoid hypertrophy. It is a common prudence that most of the general public and majority of general physicians are of the opinion that tonsillar grades are related to clinical pathology. Our study reveals tonsillar hypertrophy and severity of clinical disease are not directly proportional hence our study indicates management of acute or chronic tonsillitis cannot be influenced by the grade of tonsillar enlargement. We can consider tonsillar enlargement as a guide for prognostic evaluation. We were unable to find any literature regarding our objective of study. Hence this study can be considered as a stepping stone for further in depth clinical studies.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

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Cite this article as: Hubballi RK, Nayaka GSSS, Koujalagi SM. Clinical correlation between tonsillar hypertrophy and tonsillitis. Int J Otorhinolaryngol Head Neck Surg 2020;6:132-6.