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Original Research Article

Clinical and histopathological correlation in patients with chronic tonsillitis

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ABSTRACT

Background: Chronic tonsillitis is diagnosed when an individual has 7 episodes of tonsillitis in 1 year, 5 episodes in 2 consecutive years, or 3 episodes each year for 3 years consecutively. There is correlation of clinical and histopathological findings in patients with chronic tonsillitis.
Methods: It is prospective study which is aimed at correlation of clinical and histopathological findings in chronic tonsillitis patients underwent tonsillectomy. This was carried out in tertiary care hospital, Pune, Maharashtra, India. In our study, 25 patients of chronic tonsillitis underwent tonsillectomy were included. In this we have examined the histopathology of tonsillar tissue section in correlation with the clinical manifestations of tonsillar diseases that were due to infection.
Results: In pathological examination of palatine tonsil, underlying subepithelial tissue showed many lymphoid follicles with prominent germinal centres comprising of centrocytes, centroblasts, immunoblasts, small and large lymphocytes in 19 patients (76%). 13 patients (52%) showed prominent germinal centres with bites of salivary gland and muscle tissue. 6 patients (24%) showed prominent germinal centre with mild lymphoplasmocytic inflammatory cell infiltrate. In 4 patients (16%), tissue lined by stratified squamous epithelium showed focal ulceration. 3 patients (12%) showed stratified squamous epithelium with granulation tissue. Crush artifact were noted in 3 patients (12%). 2 patients (8%) had small granules with actinomycotic species colonies within the palatine tonsilar crypts. Only 1 patient (4%) showing keratin impacted in tonsilar tissue.
Conclusions: There is strong correlation between histopathological examination suggestive of lymphoid hypertrophy and grading of palatine tonsil hypertrophy.

Keywords: Germinal centre, Tonsil hypertrophy, Lymphoid tissue

INTRODUCTION

Palatine tonsils are part of the Waldeyer's lymphatic ring, responsible for the first line of defence against pathogens because it is located at the entrance of the respiratory and digestive tracts.[1,2] The lateral wall of the Waldeyer's ring composed of the bulky lymphatic tissue called the palatine tonsil.[1] It is lined by non-keratinous stratified epithelium, as an extension of the oropharyngeal tissue, including 30 deep crypts that invaginate into the parenchyma, in which lymph nodes are found with the germ centres responsible for B-lymphocyte production.[1,3] Along with the lymph nodes, debris of epithelial cells desquamations, alive and dead lymphocytes, as well as bacteria may be present in the crypts. Collection of pus may be observed in cases of acute tonsillitis.[4] They are coated by fibrous and dense capsule, separating them from a deeper connective tissue.[1,2] Such type of tonsils arise from the second pair of pharyngeal pouches, where endodermis bears the covering epithelium and mesenchymal structure gives origin to the lymphoid tissue.[5]

During life, palatine tonsils may go through morphological alterations, becoming enlarged due to lymphoid follicles of the germ centre; or histological changes resulting from recurrent infections, among which some are indicative of tonsillectomy.[4,7] Lymphoid hyperplasia has shown to be the main histological alteration, although tonsils are not uncommon sites for onset of head and neck neoplasms. Regarding the above, 25% are benign conditions, such as squamous papillomas, lymphangiomas and squamous cell cysts. Among the malignant types, squamous cell carcinomas, lymphomas and other lymph-epithelial carcinomas are found.[3]

The purpose of our study is the clinical and histopathological correlation in 25 patients with chronic tonsillitis in Smt. Tertiary Care Hospital, Pune, Maharashtra, India.

METHODS

Approval of the study

This study was approved by the institutional ethical committee.

Study design

This is hospital based prospective study of 25 patients who had undergone tonsillectomy in 2019-2020 at the department of otolaryngology, Tertiary Care Hospital, Pune, Maharashtra, India. The study population were presented to the outpatient clinic of otorhinolaryngology with chronic tonsillitis and posted for tonsillectomy.

Sampling method

Universal sampling method in which consecutive willing individuals meeting inclusion criteria were enrolled.

Aim of the study

It included correlation of clinical and histopathological findings in chronic tonsillitis patients.

Inclusion criteria

It included patients of both sexes in the age group 5-38 years old, complaining of chronic tonsillitis. The following signs were included: bilateral tonsillar hypertrophy, congested anterior pillar, unequal tonsil size on both sides, and enlargement of jugulodigastric lymph nodes. Patient excluded from the study those who were having bleeding diathesis, chronic illness that interfere with anaesthesia or surgery, anaemia (Hb less than 10).

Data collection included demographic data, preoperative evaluation, clinical evaluation (signs and symptoms). Palatine tonsils were classified according to the protocol proposed by Brodsky, shown in Figure 1. According to that, it is considered that: 0–tonsils inside the tonsillar fossa with no air obstruction; ±1 tonsils slightly out of the tonsillar fossa presenting 25% air obstruction; ±2 tonsils presenting 25-50% air obstruction; ±3 tonsils presenting 50-75% air obstruction; and ±4 tonsils presenting 75% air obstruction.[10]

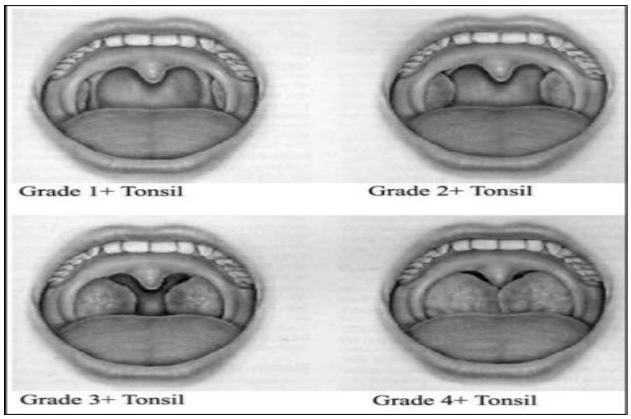

Figure 1: Grading of palatine tonsil hypertrophy proposed by Brodsky.

Patients undergone tonsillectomy with dissection method under general anaesthesia. Specimens were immediately stored in sterile glasses with 10% formaldehyde and sent for histological analysis at the pathology department, Smt. Kashibai Navale Medical College and General Hospital, Pune. The surgical specimens were preserved in formol for 24 hours and, after dehydration, a histological procedure "en bloc" (5 µm thick) was done in paraffin, which was dyed in hematoxillin-eosin and analyzed microscopically.[10] The examinations followed the compliance standards and were conducted by pathologists of the pathology department.

Statistical method

Fisher's exact probability test and Mann-Whitney test using statistical package for the social sciences (SPSS) software version 26.0.

RESULTS

In this study, 25 patients undergone tonsillectomy and their histopathological findings were revised. Among 25 patients, 12 are male (48%) and 13 are female patients (52%).Patient's age ranged from 5 to 37 years, with mean age of 21 years. There were 16 patients (64%) younger than 18 years. Only 9 subjects (36%) were between 18 and 37 years of age.

Twenty five (25) tonsillectomies were performed. Patients presenting enlarged tonsils were classified into 4 groups according to size: I (1+): 1 (4%); II (2+): 11 (44%); III (3+): 12 (48%); IV (4+): 1 (4%).

In pathological examination of palatine tonsil, underlying subepithelial tissue shows many lymphoid follicles with

prominent germinal centres comprising of centrocytes, centroblasts, immunoblasts, small and large lymphocytes in 19 patients (76%). 13 patients (52%) showing prominent germinal centres with bites of salivary gland and muscle tissue. 6 patients (24%) showing prominent germinal centre with mild lymphoplasmocytic inflammatory cell infiltrate. In 4 patients (16%), tissue lined by stratified squamous epithelium showing focal ulceration. 3 patients (12%) showing stratified squamous epithelium with granulation tissue. Crush artifact are noted in 3 patients (12%). 2 patients (8%) has small granules with actinomycotic species colonies within the palatine tonsilar crypts. Only 1 patient (4%) showing keratin impacted in tonsilar tissue.

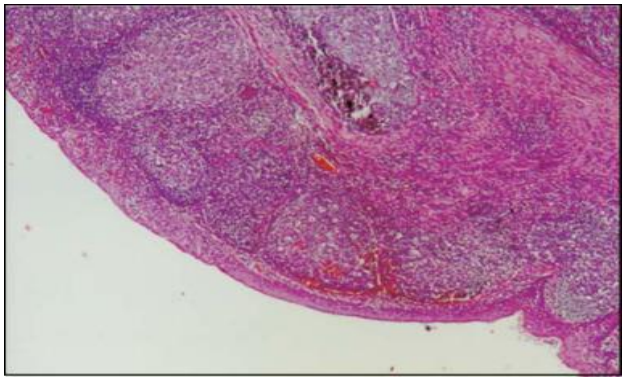

Figure 2: Normal lymphoid tissue clinical pathology analysis.

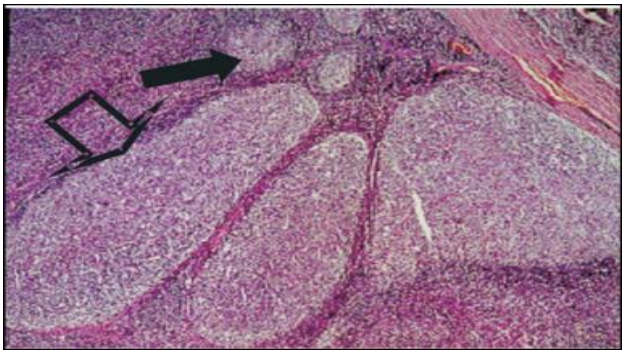

Figure 3. Follicular lymphoid hyperplasia

The solid arrow=normal follicles, and hollow arrow=no hyperplasic follicles

DISCUSSION

Among 25 patients, a slight predominance of female (52%) over male (48%) is observed. The majority of the cases are children below 18 years of age (64%) presenting recurrent tonsillitis associated with hypertrophy of palatine tonsils which is in accordance with the literature worldwide, which may be consistent, considering that microorganisms growth could stimulate proliferation of lymphoid elements.[3,12] Only 1 patient (4%) has grade I tonsillar hypertrophy, although presenting recurrent tonsillitis.

Only 2 patients (8%) presented infections by Actinomyces species colonies leading to tonsilar hypertrophy and inflammatory lesion of palatine tonsilar crypts. This incidence is similar to that reported by Bhargava et al in 2001 and Pransky et al in 1991, who observed this condition in 8.5% of the patients with predominance of hypertrophy of palatine and pharyngeal tonsils over tonsillitis.[14,15] This rate suggests that the presence of Actinomyces might be related to hypertrophy of palatine and pharyngeal tonsils in these patients or, as Actinomyces is a common agent in the tonsillar tissue, it may not be routinely analyzed in the pathological specimens.[8]

Surgery is performed due to chronic hypertrophy of tonsil and recurrent sore throat. The pathological analysis does not reveal the presence of squamous cell cysts in patients, which are if present considered benign neoplasms in patients with recurrent tonsillitis. No malignant neoplasms are found in histopathological examination of tonsil specimens.

Duration of symptoms and grade of tonsilar hypertrophy was directly related to the histopathological findings suggestive of prominent germinal centres with bites of salivary glands and muscle tissue with focal ulceration. It was previously postulated that lymphoid hyperplasia is a nonspecific finding, which may be seen in tonsillar hypertrophy, acute tonsillitis and chronic tonsillitis in the palatine tonsil.[18]

In chronic tonsillitis included (SMLI) slight to moderate lymphocytic infiltration and (DLI) diffuse lymphocytic infiltration.[18] SMLI and DLI were present in almost all of the patients in every age group and both sex. Therefore, these findings are very helpful and reliable diagnostic features to diagnose chronic tonsillitis histopathologically.

Limitations of this study

Sample size is relatively small, hence findings may not be generalised and samples are collected from patients reporting to tertiary care hospital, hence patients in other regions might have different presentation.

CONCLUSION

Our study conclude that higher grading of palatine tonsillar hypertrophy is associated with histopathological finding of lymphoid hypertrophy.

Chronic tonsillitis and chronic hypertrophy of tonsil, in few cases associated with infiltration of actinomyces species in tonsilar tissues colonies hence, actinomyces species should be screened during histopathological examinations.

In chronic tonsillitis patients histopathological examination of the removed tonsils is beneficial for making better clinical and pathological correlation and clinical judgment.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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