

## Histopathological Study of Tonsillectomy Specimen in a Tertiary Care Hospital

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Conflict of interest: Nil

### Abstract:

**Background:** In both pediatric and adult otolaryngological practice, tonsillar disorders are frequently seen and frequently necessitate tonsillectomy, with specimens undergoing histological assessment. Recurrent bouts of acute tonsillitis or a subclinical version of an infection that is resistant or poorly treated are symptoms of chronic tonsillitis. The spectrum of diseases affecting the palatine tonsils and the establishment of histological criteria for the diagnosis of chronic tonsillitis are the objectives of this study.

**Method:** In order to diagnose chronic tonsillitis, 40 palatine tonsillectomy specimens that were received by the Department of Pathology at SKMCH in Muzaffarpur, Bihar between July 2022 and June 2023 were reviewed retrospectively, evaluated histopathologically, and analyzed for a range of tonsillar diseases as well as histopathological criteria.

**Results:** A total of 40 cases were evaluated comprising of 26 males and 14 females. The mean age was 44 years with a range of 7 to 81 years. 29 specimens were histologically diagnosed as chronic tonsillitis and 11 specimens were diagnosed to have malignancy. Tonsillar cyst was found in 3 cases, out of which one showed colonies of Actinomycosis species. Histopathological examination showed lymphocytic infiltrate in 83%, increased plasma cells in 72%, presence of neutrophils in 69%, lymphoid hyperplasia in 69% and fibrosis in 76% of the cases. 11 malignant cases were diagnosed and all of them were reported as Squamous cell carcinoma. No cases of lymphoma were diagnosed.

**Conclusion:** Lymphocytic and neutrophilic infiltration in surface epithelium with or without lymphoid hyperplasia could be fairly used as the criteria for diagnosis of chronic tonsillitis. Among the tonsillar malignancies, Squamous cell carcinoma is the commonest and more common among the adult males with mean age of 60 years. Though incidence of malignancy is very rare in children, routine pathological analysis of tonsillectomy specimens is performed so as not to miss an unexpected pathology especially malignancy.

**Keywords:** Chronic tonsillitis, Lymphoid hyperplasia, Diagnosis, Tonsillar malignancy, Squamous cell carcinoma.

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### Introduction

The masses of lymphoid tissue that make up the palatine tonsils are composed of stratified squamous epithelium lining and aggregation of lymphoid follicles embedded in connective tissue stroma. Because of their physical placement in the upper aerodigestive tract, they are a component of Waldeyer's lymphatic ring, which provides the first line of defense against infections.[1]

Constant exposure to allergen triggers local immune response resulting in inflammatory changes in the tonsil. Whether or not tonsillitis represents swamping of defense mechanisms at local level or an exaggeration of normal response is not known. [1] However, tonsillar diseases are among the most commonly encountered health-related problems in the general population. Apart from tonsillitis, ton-

sils can be also the location of some specific diseases such as tuberculosis, syphilis and malignant lesions.[2] Regardless of the cause of enlargement of lymphoid tissue, tonsillectomy is one of the most frequently undertaken procedures in otolaryngology.[1] With the growing knowledge of immunological functions of tonsils, the need of tonsillectomy in cases of chronic tonsillitis remains controversial whereas tonsillar hypertrophy leading to obstructive sleep apnea is a definitive indication for surgery.[3] Suspicion of malignancy is another indication.

Chronic tonsillitis though a common infection, lacks a well-established histopathological criterion for diagnosis.[4] Furthermore, there is paucity of literature regarding the risks of malignancy in pae-

diatric patients who underwent routine tonsillectomy. In this regard, histopathologic evaluation of the tonsils is recommended in all adult patients over 40 years of age.[3] In this study, we aim at studying the pathological spectrum of conditions affecting the palatine tonsils in the resected tonsillar specimens received in our department and also to establish the histopathological criteria to diagnose chronic tonsillitis.

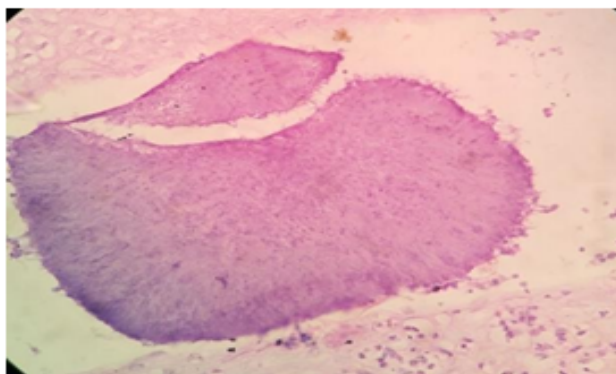
### Materials and Method

This was a retrospective study that included 40 palatine tonsillectomy specimens received at the Department of Pathology, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar from July 2022 to June 2023 after surgical interventions performed in the ENT Department of SKMCH, Muzaffarpur, Bihar. Relevant patient details were reviewed from histopathology laboratory records. These specimens were fixed in 10% formalin solution, representative bits were taken, processed and

embedded in paraffin; serial sections were taken, stained with Hematoxylin and Eosin and subjected to histopathological evaluation of spectrum of tonsillar diseases.

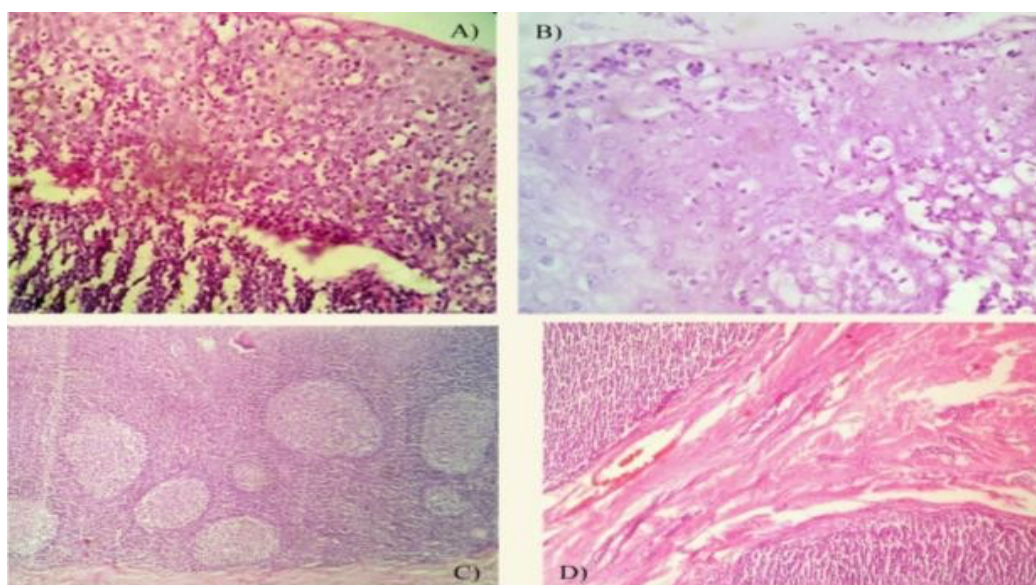
### Results

A total of 40 cases were included in this study. There were 26 males and 14 females showing male preponderance. The mean age was 44 years with a range of 7 to 81 years. Out of these, 29 specimens were histologically diagnosed as Chronic tonsillitis and 11 specimens were diagnosed to have malignancy. None of the specimens were diagnosed as Tuberculosis. Among the 29 specimens diagnosed as chronic tonsillitis, 17 were of males and 12 were of females with age distribution ranging from 7 to 70 years and the mean age of 35 years. Tonsillar cyst was found in 3 cases, out of which one showed colonies of Actinomycosis species (Fig. 1).



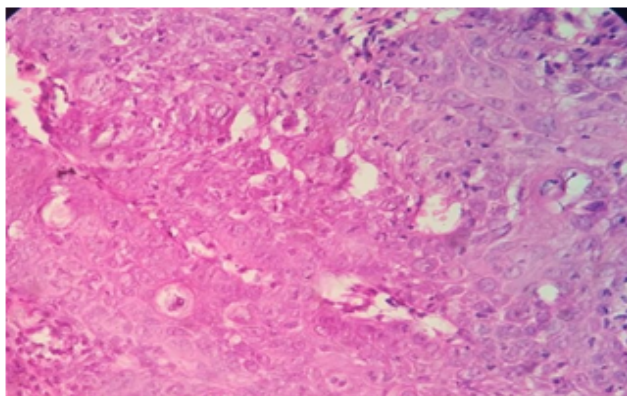
**Figure 1: Actinomycosis colony in tonsillectomy specimen**

Histopathological examination showed lymphocytic infiltrate in 83%, increased plasma cells in 72%, presence of Neutrophils in 69%, lymphoid hyperplasia in 69% and fibrosis in 76% of the cases.(Fig. 2)



**Figure 2: A) Lymphocytic infiltration in surface epithelium B) Neutrophilic infiltration in surface epithelium C) Lymphoid hyperplasia D) Fibrosis**

11 malignant cases were diagnosed with age ranging from 40 to 81 years, mean age being 60 years. 9 were males and 2 were females. All of them were reported as Squamous cell carcinoma (Fig. 3). No cases of lymphoma were diagnosed.



**Figure 3: Squamous cell carcinoma**

Age and gender wise distribution of various histopathological criteria is shown in the Table 1.

**Table1:**

Histopathological Criteria	Age Wise Distribution							Gender	
	0-10 (2)	11-20 (7)	21-30 (3)	31-40 (7)	41-50 (2)	51-60 (3)	61-70 (4)	Male (17)	Female (12)
Lymphocytic Infiltration in Surface epithelium [24]	2 (100%)	7 (100%)	2 (66.6%)	4 (57.1%)	2 (100%)	3 (100%)	4 (100%)	15 (88.2%)	9 (75%)
The presence of neutrophils Insurfaceepithelium [18]	2 (100%)	5 (71.4%)	2 (66.6%)	2 (28.6%)	2 (100%)	2 (66.6%)	3 (75%)	12 (71%)	8 (67%)
Increase in Plasma cells in subepithelial and intermolecular area ([20]	2 (100%)	6 (85.7%)	2 (66.6%)	3 (42.8%)	2 (100%)	2 (66.6%)	3 (75%)	12 (71%)	9 (75%)
Lymphoid hyperplasia [20]	2 (100%)	7 (100%)	2 (66.6%)	3 (42.8%)	2 (100%)	2 (66.6%)	2 (50%)	12 (71%)	8 (67%)
Fibrosis[22]	2 (100%)	7 (100%)	1 (33.3%)	6 (85.7%)	2 (100%)	2 (66.6%)	2 (50%)	14 (48%)	8 (67%)

## Discussion

Chronic inflammatory pathology of tonsils most often affects children at the first decade of age, but also adults, probably due to a local dysfunction of the epithelial structures. Persistence of local inflammatory reactions in the tonsillar tissue leads to several histomorphological changes.[2] In our study, majority of the cases showed lymphocytic, plasmacytic and neutrophilic infiltration in the surface epithelium indicating chronic inflammation. 69% of the cases showed lymphoid hyperplasia among which higher incidence was noted in 11-20 age group suggesting that hyperplasia is more common in younger age group. In the study done by Mogoanta et al, [2] they observed that chronic tonsillitis in children showed follicular hyperplasia and hypertrophy while in adults it led to fibrosis. Ugras et al [4] study also revealed increased incidence of lymphoid hyperplasia in children whereas

fibrosis and atrophy were more common among adults.

They also concluded that the lymphocytic infiltration in the surface epithelium with the presence of surface epithelial defect is fairly diagnostic of chronic tonsillitis. The pathological analysis revealed the presence of tonsillar cysts in 3 specimens, which are considered benign neoplasias in patients with recurrent tonsillitis. [1,4] Colonies of bacteria morphologically consistent with Actinomyces species were found only in one of the cases of chronic tonsillitis with cyst. There is still controversy in the literature regarding the association between Actinomyces species and palatine tonsil hypertrophy.

A low incidence of this association was described by Dell' Aringa et al, [5] whereas study done by Sujatha et al [6] concluded that Actinomyces colonisation of the tonsillar crypts was significant in

causing chronic tonsillitis. The histopathological finding of granuloma is important to diagnose tuberculosis as it requires specific therapy. However, no cases of tuberculosis were reported in our study. Squamous cell carcinoma is the most common malignancy encountered in the tonsils commonly affects patients in the fifth to seventh decade of life. [1,7]

The incidence in men is 2 to 5 times greater than the incidence observed in women. [7] Our study is consistent with this literature where Squamous cell Carcinoma was found in all cases diagnosed as malignant with highest incidence among males in the age group 60-70years. No malignant cases were diagnosed under 40 years age group suggesting that tonsillar malignancies are rare in younger age group as concluded by the study done by Ibekwe et al, [3] Adoga AS et al [8] and Osbay I et al. [9]

### Conclusion

Lymphocytic and neutrophilic infiltration in surface epithelium with or without lymphoid hyperplasia could be fairly used as the criteria for diagnosis of chronic tonsillitis. Routine pathological analysis of tonsillectomy specimens does not often alter the clinical course of management in children, yet it is performed so as not to miss an unexpected pathology especially malignancy. Our study also proved that the incidence of malignancy is very rare in children. Among tonsillar malignancies, Squamous cell carcinoma is the commonest and more common among the adult males which suggest that in adults, histopathological study is necessary for confirmatory diagnosis.

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