Original Article

Histomorphological Changes in the Chronic Tonsillitis of Children in Iraq

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Abstract

Background: The diagnosis of chronic tonsillitis in childhood is usually based on the rate of acute tonsillitis episodes. At least three or more episodes in each of the three preceding years, hypertrophy, and recurrent tonsillitis commonly indicate that nasopharyngeal tonsils and palatine tonsillectomy are lymphoid tissue, non-encapsulated nodular masses of the digestive and respiratory tract epithelium. **Objectives:** This study aimed to analyze the profile and main pathological changes in 30 patients with palatine tonsil hypertrophy, recurrent infections, or both. **Materials and Methods:** This study was a retrospective analysis conducted on a cohort of 30 patients diagnosed with chronic recurrent tonsillitis who underwent tonsillectomy at the Hilla Teaching Hospital between November 2022 and June 2023. This study analyzed the outcomes of various histological alterations in the extracted tonsils. Of the 30 samples, 30 tissue blocks embedded in paraffin wax were collected (12 men and 18 women aged 4–8 years) from patients with chronic recurrent tonsillitis who underwent tonsillectomy between retrieved from the files of Hila Teaching Hospital. **Results:** The age of the patients varies from four to eight years, with a total of 30 instances. All the patients underwent tonsillectomy. Thirty chronic recurrent tonsil and tonsillitis samples were tested. The patients were 4–8 years of age (12 males and 18 females). Twenty-six have been identified as reactive with chronic inflammation, seven, which samples revealed pure hyperplasia and chronic inflammation with hyperplasia in two cases. **Conclusion:** Histopathological examination is essential for tonsillectomy cases, especially in young patients, and throat symptoms provide additional information for histological testing.

Keywords: Children, chronic tonsillitis, recurrent tonsillitis

Introduction

Tonsillitis is one of the most important diseases in the community, especially in children[1]; the infection appears mostly in winter and spring.[2] The palatine tonsils are a component of Waldeyer's lymphatic ring. It functions as a protective barrier against germs because they are located near the entrances of the respiratory and digestive systems.[3] They play a crucial role in the body's immunological system. The structure also includes the tonsils, lingual, and pharyngeal, as well as lymphatic tissue spread along the posterior oropharyngeal wall.[4] These components were used to acquire antigenic data. The palatine tonsil is covered by a squamous epithelium that is stratified and a non-keratinizing stratification, "transitional kind" that lines the crypts of the tonsil.[5] The basement membrane of the tonsil is discontinuous, and lymphoid cells are present within the epithelium. The diagnosis of chronic tonsillitis frequently depends on the patient's medical records.[6]

The clinical criterion for chronic tonsillitis, indicating the need for tonsillectomy, is the occurrence of seven or more bouts during the previous year or more than five incidents over the past two years.[7] Throughout life, the palatine and tongue tonsils undergo morphological changes,[8] becoming larger because of the lymph follicles in the germ center. Additionally, histological modifications may occur as a result of frequent infections[9] some of which may require tonsillectomy. Accurately quantifying the number of episodes of acute tonsillitis is challenging.

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However, diagnosis of chronic tonsillitis[10] in adults frequently relies on medical records, other throat-related signs, or even tonsillitis.[11] According to some research, persistent tonsillitis is present in over 93% of cases where histological indicators such as lymphocyte infiltration, the condition of lymphatic tissue follicles, and the presence of intra-epithelial lymphocytic microabscesses are seen.[12]

The histological diagnosis in the majority of tonsillectomies frequently involves "nonspecific lymphatic hyperplasia" or "lymphoid tissue hyperplastic-reactive state." This diagnosis was made without considering the medical and surgical characteristics of the patient, such as recurrent tonsillitis or hypertrophy.[13]

Therefore, the objective of this study was to evaluate the basic histological characteristics to distinguish hypertrophy with resulting blockage from persistent tonsillitis and to establish a connection with medical symptoms.[14]

This study examined the histology of the tonsils in children who underwent tonsillectomy due to repeated tonsillar hyperplasia and tonsillitis. Persistent tonsillitis is often characterized by follicular hyperplasia and persistent inflammation, making it a prevalent pathological disease in most cases.

Materials and Methods

The study was performed in the laboratories of Hilla Teaching Hospital, Babylon, Iraq, between November 2022 and June 2023. Of the 30 samples, 30 tissue blocks embedded in paraffin wax were collected (12 men and 18 women aged 4–8 years) from patients with chronic recurrent tonsillitis who underwent tonsillectomy between retrieved from the files of Hilla Teaching Hospital. The materials inside each patient were augmented using comprehensive medical records, clinical examinations, surgical observations, and intraoperative observations. Pathologists evaluated specimens acquired after tonsillectomy both histopathologically and macroscopically in the usual practice. The excised palatine tonsils were immersed in 10% neutrally buffered formalin for 24 h. After dehydration with xylene and alcohol, histological analyses were performed using paraffin. Four tissue samples (1.0 cm × 1.0 cm × 0.5 cm in diameter, namely the surface epithelium), were taken from every palatine tonsil. Serial sections of 3 mm thickness were obtained using a semi-automatic microtome (LEICA RM 2145, Leica Instruments GmbH, Germany). The sections were then stained with hematoxylin and eosin (H + E). The histological slides were examined using a fluorescence microscope (OLYMPUS) at magnifications ranging from 40 to 400 in the hospital.

Statistical analysis

IBM SPSS Statistics was used for statistical analysis. Student *t*-test was used to test the equality of means hypothesis.

Ethical approval

The histopathological section of the patient was obtained under observation, and the condition of each patient was approved by the pathological lab in the Hilla General Teaching Hospital. The Duration of surgical removal did not cause any harm to the patients. The block was taken after tonsillectomy (number of block sections [628/24] – [629/24]).

Results

Thirty chronic recurrent tonsil and tonsillitis samples were tested. The patients were 4–8 years of age (12 males and 18 females). This study reported the essential pathological findings in all patients. Among the 30 samples, 26 were identified as reactive with chronic inflammation, as shown in Figure 1; seven samples revealed pure hyperplasia show Figure 2; and chronic inflammation with hyperplasia was observed in two cases, as shown in Figure 3. Fibrosis Stage I is observed in 24 cases, while Stage II is observed in two cases, as shown in Figure 4, and necrosis Stage I was observed in nine cases, as shown in Figure 5 and Tables 1 and 2.

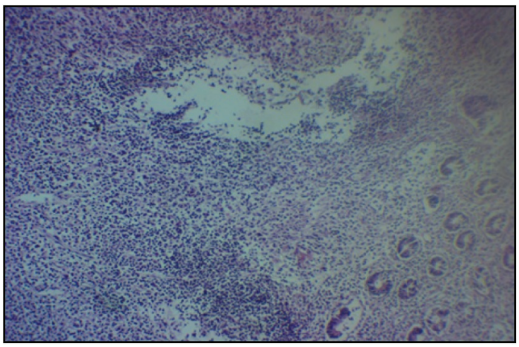

Figure 1: Chronic inflammation: severe intra-epithelial

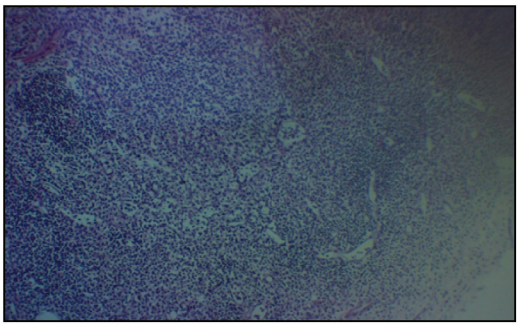

Figure 2: Pure hyperplasia: multiple secondary lymphoid tissue follicles with germinal centers

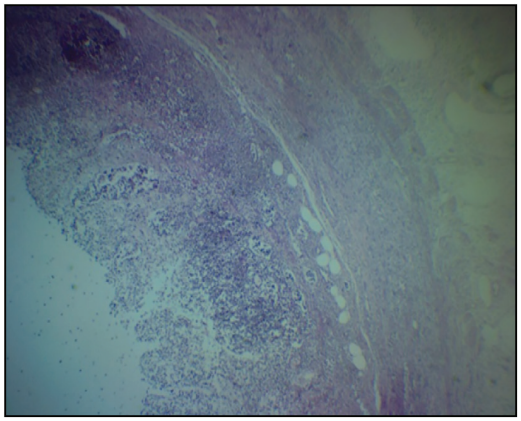

Figure 3: Chronic inflammation with hyperplasia

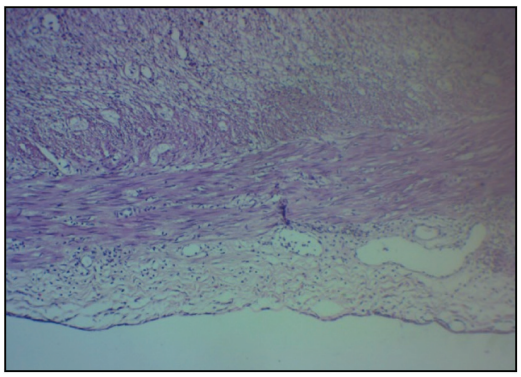

Figure 4: Chronic inflammation with fibrosis

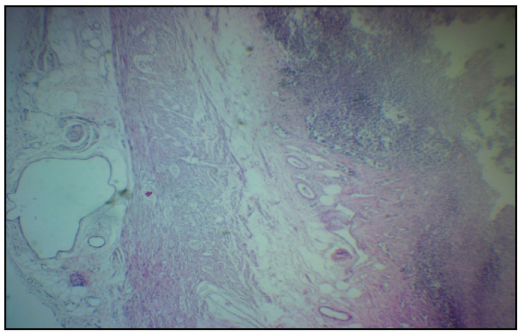

Figure 5: Chronic inflammation with necrosis

Table 1: Distribution of patients according

Gender	
Males	12 (40%)
Females	18 (60%)
Skin color	
White	25 (83.3%)
Not white	5 (16.6%)
Weakness: chronic/fatigue	26 (86, 6%)
Heart beating	24 (80%)
Swallowing difficulties	23 (76, 6%)
Joint pain	22 (66%)
Snoring	20 (66%)
Loss of appetite	23 (76.6%)

Table 2: Correlation between clinic-pathologic characteristics in patients

Pathological findings	*N* (%)
Gender	
Male	12 (40%)
Female	18 (60%)
Chronic inflammation	21 (70%)
Pure hyperplasia 7 (23, 3%)	
Chronic inflammation with hyperplasia	2 (6, 6%)
Fibrosis stages	
I	24 (80%)
II	2 (6, 6%)
III	0 (0%)
Necrosis stages	
I	9 (33.3)
II	0 (0%)
III	0 (0%)

Discussion

The diagnosis of chronic tonsillitis follows a clinical history and throat-related symptoms. Based on Alcantara *et al*.,[15] tonsillectomy was the most frequently performed surgical procedure in children. The ages of the patients aligned with the age range in which tonsillitis and hypertrophy became more severe and recurring. However, it has been shown that the volume and size of the tonsils.[16]

Variations occur based on age and previous exposure to infections and/or inflammation. Few investigations have examined the connections between symptoms linked to the throat and histological chronic tonsillitis results. Ripplinger *et al*.[12] discovered that there was no statistical correlation between the incidence of tonsillitis and the histological type of chronic tonsillitis. However, they found that chronic inflammation with tonsillar hyperplasia was among the highest observed histological results, accounting for 42% of cases. The degree of blockage caused by palatine tonsil hypertrophy was significantly higher in children of the hypertrophy class. A greater number of germinal centers in the hypertrophy class were observed. The term "germinal center" refers to a highly active lymphoid follicle responsible for the generation of lymphocytes.[17]

This hypothesis proposes that continuous exposure to antigens from these diseases, among others, leads to the development of hypertrophy, resulting in symptomatic obstruction of the airways. Additionally, a greater density of lymph follicles has been observed in children belonging to the hypertrophic class, but this difference did not reach statistical significance. The volume and size of tonsils vary depending on age, previous infection, and/or inflammation. Prior research has shown the presence of inflammatory lesions inside the crypts of the palatine tonsils.[5]

This study documented that 18% of the participants had follicular lymphoid hyperplasia with acute localized suppurative inflammatory lesions in the tonsil crypts. These data are consistent with those of the current study. A total of 38.3% of individuals with chronic tonsillitis had persistent inflammation and an increase in the size of the tonsils, as diagnosed based on signs linked to the throat.

There are notable links between the third histological category, chronic inflammation with hyperplasia, and various pathogenic factors. The antigens in the two entities exhibit variations, and the hypertrophy group elicits a stronger stimulation, leading to a more pronounced differentiation of B cells.[18]

Conclusion

The present study demonstrated that the evaluation of throat-related signs serves as a beneficial supplementary examination, confirming the correlation between the clinical manifestations of histological observations and chronic tonsillitis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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