

Comparison of Routine Histopathological Examination Results in Children and Adults After Tonsillectomy and/or Adenoidectomy

Original Investigation

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Abstract

Objective: Tonsillectomy and/or adenoidectomy is one of the most common otolaryngologic surgical procedures. There is still an ongoing debate as to whether or not histopathological examination should be performed in which cases after these surgeries. The aim of this study is to compare the histopathologic examination results of routine tonsillectomy and/or adenoidectomy surgical specimens of children and adults.

Methods: The routine histopathological examination results of patients who had adenoidectomy and/or tonsillectomy between April 2010 and April 2017 in Tokat State Hospital were evaluated from medical records retrospectively. The results were compared in terms of malignancy between children and adult patients.

Results: A total of 1849 histopathological examination results were included in the present study. Of the patients, 1574 were children, and 275 were adults. All of the patients who underwent adenoidectomy were diagnosed with reactive lymphoid hyperplasia. Of the 1356 patients who underwent tonsillectomy, only two were detected with malignancies. These two patients were adults.

Conclusion: While routine histopathologic examination is necessary for every case in adult population, risk factors should be considered in pediatric patients after tonsillectomy and/or adenoidectomy.

Keywords: Tonsillectomy, adenoidectomy, histopathology, malignancy

Introduction

Tonsillectomy and/or adenoidectomy are the most common otolaryngologic interventions in children (1). The most common indications for tonsillectomy and/or adenoidectomy are recurrent tonsillitis and obstructive sleep apnea. While the most common indication for tonsillectomy in the past was recurrent tonsillitis, obstructive sleep apnea has become the most common indication for tonsillectomy due to the increased use of antibiotics and the development of protective methods (2). Although the most common indication for tonsillectomy in adults is chronic tonsillitis, it has been increasingly applied as a part of surgical treatment of obstructive sleep apnea in recent years (3).

examination in which cases in tonsillectomy and/or adenoidectomy is gaining more importance (4). Studies including larger numbers of pediatric patients show that the rate of unexpected malignancy is very low (5, 6). Increased malignancy rates especially in the tonsils in adults reveal the necessity of routine histopathological examination. The incidence of malignant pathologies after tonsillectomy in adults ranges from 2% to 10% (7, 8). While unexpected malignancy was not detected in these studies, risk factors, such as tonsillar asymmetry, history of head and neck cancers, and atypical tonsillar lesions, were observed before surgery in patients with malignancy.

There is no clear consensus on whether benign tonsil and adenoid specimens should be examined histopathologically. Considering the cost of these histopathological examinations and the loss of labor power in the laboratory, the clinical evaluation for the need to perform histological

In the present study, we evaluated the routine histopathological examination results of patients who underwent tonsillectomy and/or adenoidectomy in our clinic. Patients were grouped according to their age, gender, and clinical status. The need to perform histopathological examination in which



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cases in children and adults has been discussed in light of the literature.

Methods

The study was approved by the clinical research ethics committee of Gaziosmanpaşa University School of Medicine (approval no. 17-KAEK-173). Patients who underwent tonsillectomy, adenoidectomy, and/or adenotonsillectomy in Tokat State Hospital between May 2010 and April 2017 and who underwent histopathological evaluation were evaluated. Data of 1849 patients were obtained from their medical records. Of the patients, 1574 were <18 years, and 275 were ≥18 years.

In routine practice, samples obtained after operation were macroscopically and histopathologically evaluated by the pathologists of our hospital. Specimens were fixed in 10% formalin and sent to the Pathology laboratory. Samples were embedded in paraffin, stained with hematoxylin and eosin, and examined in thin sections. Immunohistochemical evaluation was performed in clinically suspected cases of malignancy. Patients were evaluated based on age, gender, and indication of surgery. After the histopathological examination results of the patients were evaluated, differences in histopathological examinations of children and adults were determined. The Statistical Package for the Social Sciences (SPSS) for Windows 19.0 (IBM Corp.; Armonk, NY, USA) was used for statistical analysis.

Results

A total of 1849 tonsil and adenoid specimens were examined. Patients aged 1-17 years were grouped as pediatric, and patients aged 18 years or older were grouped as adult. There were 1574 (85%) pediatric patients and 275 (15%) adult patients included in the study. The mean ages of the children and adults were 7.1 years (1-17) and 27.8 (18-81) years, respectively (Table 1). Of the patients, 969 (52.4%) were males, and 880 (47.8%) were females.

Of the 1849 patients, 493 (26.6%) underwent adenoidectomy, 161 (8.7%) underwent tonsillectomy, and 1195 (64.6%) underwent adenotonsillectomy. All patients who underwent adenoidectomy were reported as reactive lymphoid hyperplasia. Of the 1356 patients who underwent tonsillectomy and/or adenotonsillectomy, 552 (41%) were reported as reactive lymphoid hyperplasia and chronic tonsillitis, and 751 (55.3%) were reported as reactive lymphoid hyperplasia (Table 2).

Significant pathological findings were observed in 53 (3.9%) of 1356 specimens. Malignancy was detected in only 2 (0.1%) of these cases. These patients were in the adult patient group. No malignancy was detected in the pediatric patient group. Of these 2 patients, one had Mantle cell lymphoma, and the

other had diffuse large B-cell lymphoma. The first patient was a 56-year-old woman who had recurrent tonsillitis episodes and tonsillar asymmetry on physical examination. On admission, necrotic areas and hemorrhagic foci were observed in the left tonsil. She was suspected of having malignancy. The histopathological result was correlated with the clinical findings. The other patient was a 66-year-old woman who had tonsillar asymmetry on physical examination and was operated due to recurrent tonsillitis. Malignancy was an expected condition in this patient. Immunohistochemical evaluation in addition to routine examination was performed in both patients.

Discussion

Although histopathological examination is generally performed after tonsillectomy and/or adenoidectomy, there is still a debate about whether histopathological examination is necessary or it is required in which cases. In the study by Strong et al. (9), it was found that 67% of otolaryngologists send adult tonsillectomy specimens to the Pathology laboratories, and that only 38% send pediatric tonsillectomy specimens to the Pathology laboratories. They have emphasized that pediatric patients should undergo histopathological examination especially in clinical situations, such as tonsillar asymmetry, mucosal changes, night fever, and cervical lymphadenopathy, and that specimens should be sent to the pathology laboratory in adults (9). In the study performed by Younis et al. (7), while no malignancy was detected in 2099 pediatric tonsillectomy specimens, malignancy was detected in 40 out of 339 adult tonsillectomy specimens. Most of them had squamous cell carcinoma. In our study, only two patients had malignancy. Of these two patients, one had Mantle cell lymphoma, and the other had diffuse large B-cell lymphoma. Both of these patients had findings, such as tonsillar asymmetry, tonsillar discoloration, and weight loss that met the criteria for malignancy.

Actinomyces are anaerobic, gram-positive, filamentous bacteria. The presence of actinomyces in tonsillar specimens was reported to be between 1.3% and 57% (10, 11). Although it is believed that actinomyces are not a precursor for an active infection of the tonsils, it is considered that they play a significant role in the etiology of tonsillar lymphoid hyperplasia (12). In our study, when the preoperative medical records of 39 patients with actinomycosis were examined, it was found that recurrent tonsillitis was more predominant among these patients and was proportionally higher in adult patients.

In our study, no malignancy was detected in the pediatric patient group. In the literature, large-scale studies also revealed similar rates (0%, 0.07%, 0.17%, and 0%) (7, 13-15). In the case-series of Williams et al. (13), preoperative risk factors, such as necrotic tonsil, tonsillar asymmetry, and lymphadenopathy, were found in all three of the pediatric cases with tonsillar malignancy. In the case-series of Garavello et al. (14), preoperative risk factors were not found in two pediatric cases of tonsillar malignancy. The difference between these two studies suggests that a detailed preoperative risk assessment is also important in pediatric patients. In our study, necrotic tonsil or suspicious lymphadenopathy was

Table 1. Demographic findings

	Mean age	N
Pediatric patients	7.1	1574 (85%)
Adult patients	27.8	275 (15%)

Table 2. Comparison of histopathological findings in children and adults

Specimen	Case	Pediatric patients		Adult patients		Total	
		n	%	n	%	n	%
Adenoidectomy	RLH	448	100	45	100	493	100
Tonsillectomy and/or adenoidectomy	RLH	633	56.4	118	52	751	55
	RLH and CT	468	41.5	84	36	552	41
	Lymphangiomatous polyp	1	0.09	-	-	1	0.08
	Squamous papilloma	-	-	4	1.9	4	0.3
	Hemangioma	1	0.09	-	-	1	0.08
	Epidermal inclusion cyst	4	0.3	2	0.9	6	0.45
	B-cell non-Hodgkin's lymphoma (Mantle)	-	-	1	0.45	1	0.08
	Diffuse large B-cell lymphoma	-	-	1	0.45	1	0.08
	Actinomyces	19	16	20	8.6	36	2.6
						1849	100

RLH: reactive lymphoid hyperplasia; CT: chronic tonsillitis

absent despite the presence of tonsillar asymmetry in some pediatric cases. Although tonsillar malignancy is relatively low in pediatric patients, a detailed histopathological evaluation should certainly be performed in patients with preoperative risk factors (16, 17).

In our study, it was also observed that three pediatric patients had an epidermal cyst, and one pediatric patient had a lymphangiomatous polyp. In these patients, there were well-defined, benign lesions on preoperative evaluation, and the pathological results were consistent with the clinical findings.

The adult age group differs from the pediatric age group. The incidence of tonsillar malignancy is higher in adults than in children due to smoking, alcohol, and environmental factors. In the study by Faramarzi et al. (18), malignancy was detected in 26 out of 5058 tonsillar specimens. Most of them had non-Hodgkin's lymphoma. Unexpected malignancy was found in only one patient. In our study, non-Hodgkin's lymphoma was detected in two patients. However, these patients had preoperative risk factors, such as necrotic tonsil and tonsillar asymmetry. In the study by Beaty et al. (19) conducted on adult tonsillar specimens, it has been indicated that preoperative risk factors include cancer history, tonsillar asymmetry, neck mass, atypical tonsillar lesion, and accompanying symptoms (such as night fever, weight loss, and fatigue).

One of the biggest motivations for studies on whether tonsil and adenoid specimens should be examined histopathologically is the fact that there is a debate on the cost and the loss of labor power. In the study by Bizzell et al. (4) in which tonsillar specimens were examined for 10 years, it was seen that macroscopic examination increases proportionally in recent years, and microscopic examination decreases gradually. They observed that the annual cost of macroscopic examination was US\$ 1,115,340 and the annual cost of microscopic examination was US\$ 180,258 (4). Randall et al. (5) reported that the amount of money spent on the examination of adenotonsillectomy and adenoidectomy

specimens in the United States in 2005 was US\$ 35,467,080. In Turkey, in order to cover the cost of some surgeries, the private insurance companies ask for histopathological examinations. Histopathological examination is also required after adenotonsillar surgery in public hospitals in Turkey. Tonsillectomy and adenoidectomy are included in this context. However, the results of the present study and many other studies suggest that histopathological examination should be performed in the presence of risk factors in tonsillectomy and/or adenoidectomy especially in children (8, 15, 17). Therefore, this rule can be rearranged according to existing scientific information in order to decrease cost and human labor.

Conclusion

Histopathological evaluation after tonsillectomy and/or adenoidectomy is not necessary if there is no risk factor on preoperative evaluation of the pediatric patients. Preoperative risk factors should be evaluated well in the adult age group. Histopathological evaluation should be done accordingly.

Ethics Committee Approval: Ethics committee approval was received for this study from the Ethics Committee of Gaziosmanpaşa University School of Medicine (17-KAEK-173).

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