

Histologic Findings of Tonsillectomy Specimen with the Necessity of Microscopic Evaluation in Young Patient

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ABSTRACT

Introduction: Tonsillectomy is one of the most common procedures in the hospital. Recent studies reveal that histopathological findings of routine tonsillectomy in the young patient has no significant pathology findings and consume times and human resource. The need of routine microscopic examination in tonsillectomy from the young patient is questioned. The objective is to study the necessity of microscopic evaluation of tonsillectomy specimen in the young patients and pathological findings in tonsillectomy specimen.

Methods: A retrospective medical record review was performed at Srinagarind Hospital. The pathological specimens of 401 patients who underwent tonsillectomy at the age under 19 years old in 2011-August 2016 were analyzed and the histopathological findings, macroscopic examination, indication of surgery and underlying disease were reviewed.

Results: A total of 401 patients were included. The age distribution was one to 19 years (mean 7.4 years, SD 4.4). There were 251 males (62.6) and 150 females (37.4%). Lymphoid hyperplasia was detected in all patients (100%). No unexpected malignancies were found in pediatric patients.

Conclusions: No unexpected finding in routine tonsillectomy specimens from the young patients is identified. However, microscopic examination should be considered in clinically or macroscopically suspicious cases for malignancy.

Keywords

Microscopic examination, Tonsil, Tonsillectomy.

Introduction

Tonsillectomy is one of the most common procedures in the hospital [1-6]. The most common indication is sleep apnea and chronic tonsillitis. Many study reveals no significant histopathological findings in routine tonsillectomy [7-12], especially pediatric patients [11,12]. But there are some unexpected findings found such as glycogen storage disease, lymphoma and lymphosarcoma [13-16].

Nelson et al. had studied the cost effectiveness of microscopic examination of tonsils and found a very low prevalence of

unsuspected pathology on gross pathologic analysis of routine tonsillectomy specimens in children. Exploration of the cost implications suggests that such a practice is not a cost-effective use of limited health care resources [9].

In Thailand the study about unexpected pathology in tonsillectomy, to our knowledge, is not available. So we decided to study the histopathologic findings of routine tonsillectomy in young patients at Srinagarind hospital from January 2011 to august 2016.

Materials and Methods

A retrospective chart review of all patients under the age of 19 who underwent tonsillectomy between January 2011 and August 2016 was carried out at the Srinagarind hospital, Khon Kaen University.

The medical chart, pathology requisition form, and histologic slides were reviewed for patients with an unexpected histologic diagnosis. The records were analyzed concerning each patient's age, sex, indication for surgery, underlying disease and the result of macroscopic and microscopic examination of the specimen. While the patients operated for chronic or recurrent infections and obstructive hypertrophy were being evaluated, the patients with suspected to have malignancy or unilateral tonsillar enlargement, craniofacial anomalies, post transplantation, post-radiation, post-chemotherapy, history of hematologic and lymphoid malignancy were not included in the study.

In our institution, tonsillectomy specimens are fixed with formalin, embedded in paraffin, and stained with hematoxylin and eosin before sectioning and light microscopic examinations. All data were recorded and analyzed by Microsoft excel.

Calculation of sample size by
$$n = \frac{N}{1 + Ne^2}$$

n = sample size

N = number of people in Khon Kaen province who under age of 19 year-old (426,537¹⁶people)

e = allowable error 5%, e=0.05 Sample size = 400

Results

The 407 specimen were collected in January 2011 to August 2016. 6 of them were excluded due to suspicious of malignancy. A total of 401 patients were included (Figure 1). The age distribution was one to 19 years (mean 7.4 years, SD 4.4). There were 251 males (62.6%) and 150 females (37.4%). Lymphoid hyperplasia was detected in all patients (100%) and presence of Actinomyces sp. in 14.5% of specimens (58/401). The two most common indication for tonsillectomy are sleep apnea in 186 (46.4%) and chronic tonsillitis in 178 (44.4%). The three most common comorbidity are allergic rhinitis in 140 patients (78.7%), asthma in 36 patients (20.2%) and obesity in 31 patients (17.4%). No unexpected pathologic findings were found in all patients.

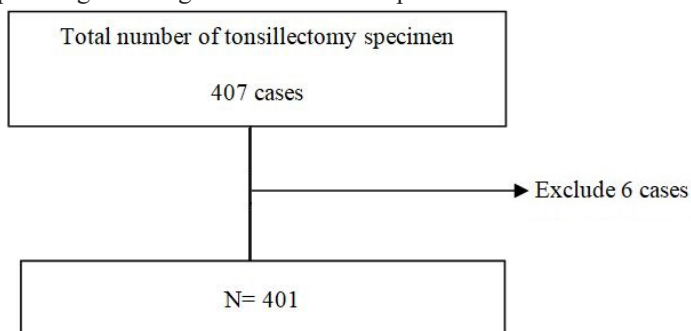


Figure 1: The inclusion flow chart.

Discussions

The tonsillectomy is one of the most common surgical procedures in the hospital. The patients usually be diagnosed as chronic hypertrophic tonsillitis and the most common clinical indications are sleep apnea and chronic tonsillitis. Of all pathologic conditions that can affect the tonsils, recurrent and chronic infections are the

most common, particularly in the pediatric population. Tonsillitis is one of the most common disorders of the head and neck, and approximately 11% of all school children will seek medical attention for pharyngotonsillitis per year [12].

The histopathologic appearance of tonsils that are chronically and repeatedly infected usually shows follicular lymphoid hyperplasia with large germinal centers often with interfollicular inflammatory cell accumulations. Fibrosis may also be present. Foci of superficial mucosal ulcerations may be present in acutely infected specimen [17].

Our study reveals lymphoid hyperplasia in all tonsillectomy specimens. Neither malignant tumor nor granulomatous inflammation of significant infectious diseases such as tuberculous tonsillitis is present. The result is similar to those of previous study [18-21].

Although Actinomyces sp. has been identified in 14.5% of specimens (58/401), its possible role in tonsillar disease is still controversy. Studies by Ozgursoy et al. and Pransky et al. have postulated a role of actinomycetes in recurrent tonsillitis and tonsillar hypertrophy, whereas works of van Lierop et al. and Gaffney et al. did not find any causal association. Actinomyces are anaerobic, Gram-positive bacteria and are part of oral flora. The presence of Actinomyces without clinical findings of actinomycosis is usually insignificant, and no additional treatment is necessary [7].

A retrospective review of pertinent literature regarding tonsillectomy, adenoidectomy, and related surgical pathology was conducted by Randall D et al. in 2007. They conclude that routine histologic examination is unnecessary for tonsillectomy. Microscopic examination of adenotonsillectomy specimens are warranted only when patients demonstrate findings associated with malignancy such as tonsillar asymmetry, history of cancer, neck mass, tonsil firmness, weight loss, and constitutional symptoms.

However, other studies have similarly result of low incidence of unexpected pathology in routine adenotonsillectomy specimens in the pediatric population [7-12,22]. Garavello et al. identified 0.18% (2 of 1123 patients) who underwent routine tonsillectomy for chronic tonsillitis with no suspicion of malignancy preoperatively. Both patients were diagnosed with stage I Burkitt's non-Hodgkin's lymphoma of the tonsil and received chemotherapy [14]. One of them was a 6-year-old male with a slight asymmetry of the tonsils who underwent surgery for recurrent acute tonsillitis. The other was an 8-year-old male with symmetrically enlarged tonsils who also underwent surgery for recurrent acute tonsillitis. However, no information of HIV status, which may be related to pathogenesis of lymphoma in these patients, was available.

Recently, Rokkjaer et al. had study the systemic literature review of the unsuspected malignancy in routine tonsillectomy, identified only 0.01% (2 of 21,223 children patients) of unsuspected malignancy in pediatric pateints [23]. One of them was a 16-year-old boy who was studied by Starry in 1939, and was diagnosed as

lymphosarcoma [15]. It was unclear whether this case was true unsuspected cases, because symptoms and clinical findings were not described. The other patient was a 9-year-old boy underwent tonsillectomy because of recurrent tonsillitis and was diagnosed as lymphoma [18]. They concluded that the rarity of unsuspected malignancy in clinically benign tonsils fails to provide adequate justification for routine histological examination.

Tonsillectomy increases medical care costs which is an important factor in the current medicoeconomic environment [9]. The histopathologic examination results of tonsil tissues are compatible with preoperative clinical impressions and these impressions rarely change [12]. Literature review demonstrates that it is possible to identify patients with risk of tonsillar malignancy with great accuracy. In 1998, Beaty et al. proposed "high risk factors" for tonsillar malignancy in adults. These risk factors were clinical history of cancer, tonsillar asymmetry, tonsil firmness, visible lesions, concomitant neck adenopathy, unexpected weight loss and constitutional symptoms such as fatigue, night sweats, anorexia, and fever. All these risk factors were statistically significant associated with the presence of tonsillar malignancy.

Therefore, the clinical informations are very useful to screening the malignancy. All patients must be carefully examined to detect any clinical signs of malignancy before surgery by means of a thorough medical history and head and neck examination. Additionally, gross examination of tonsils is also important. If there is any macroscopically suspicious for malignancy such as asymmetry of tonsils, necrosis or hemorrhage, the specimens should be submitted for microscopic examination.

Limitation of the study

Due to the retrospective study we didn't have a clinical information form and gross examination protocol.

Limit number of specimen.

Conclusions

No unexpected finding in routine tonsillectomy specimens from the young patients is identified. However, microscopic examination should be considered in clinically or macroscopically suspicious cases for malignancy. Additional studies of the incidence of unexpected pathology findings in tonsillectomy specimens of pediatric patients at other areas of Thailand may be useful for considering of the unnecessary of routine tonsillar microscopic examination in children.

References

1. Derkay CS. Pediatric otolaryngology procedures in the US 1977-1987. *Int J Pediatr Otolaryngology*. 1993; 25: 1-12.
2. Ross AT, Kazahaya K, Tom LW. Revisiting outpatient tonsillectomy in young children. *Otolaryngol Head Neck Surg*. 2003; 128: 326-331.
3. Bloor MJ, Venters GA, Samphier ML. Geographical variation in the incidence of operations on the tonsils and adenoids: an epidemiological and sociological investigation. Part I. *J Laryngol Otol*. 1978; 92: 791.
4. Browning GG. An important, randomized controlled trial of adenotonsillectomy. *Clin Otolaryngol*. 2005; 30: 58-59.
5. Van Staaik BK, van den Akker EH, van der Heijden GJ, et al. Adenotonsillectomy for upper respiratory infections evidence based. *Arch Dis Child*. 2005; 90: 19-25.
6. American Academy of Family Physicians American Academy of Otolaryngology-Head and Neck Surgery American Academy of Pediatrics Subcommittee on Otitis Media With Effusion. Otitis media with effusion. *Pediatrics*. 2004; 113: 1412-1429.
7. Verma SP, Stoddard T, Gonzalez-Gomez I, et al. Histologic analysis of pediatric tonsil and adenoid specimens is it really necessary *International journal of pediatric otorhinolaryngology*. 2009; 73: 547-550.
8. Sturm-O'Brien AK, Hicks JM, Giannoni CM, et al. Optimal utilization of histopathologic analysis of tonsil and adenoid specimens in the pediatric population. *International journal of pediatric otorhinolaryngology*. 2010; 74: 161-163.
9. Nelson ME, Gernon TJ, Taylor JC, et al. Pathologic evaluation of routine pediatric tonsillectomy specimens analysis of cost-effectiveness. *Otolaryngology--head and neck surgery official journal of American Academy of Otolaryngology-Head and Neck Surgery*. 2011; 144: 778-783.
10. Faramarzi A, Ashraf MJ, Hashemi B, et al. Histopathological screening of tonsillectomy and/or adenoidectomy specimens a report from southern Iran. *International journal of pediatric otorhinolaryngology*. 2009; 73: 1576-1579.
11. Erdag TK, Ecevit MC, Guneri EA, et al. Pathologic evaluation of routine tonsillectomy and adenoidectomy specimens in the pediatric population is it really necessary *International journal of pediatric otorhinolaryngology*. 2005; 69: 1321-1325.
12. Younis RT, Hesse SV, Anand VK. Evaluation of the utility and cost-effectiveness of obtaining histopathologic diagnosis on all routine tonsillectomy specimens. *Laryngoscope*. 2001; 111: 2166-2169.
13. Dohar JE, Bonilla JA. Processing of adenoid and tonsil specimens in children a national survey of standard practices and a five-year review of the experience at the Children's Hospital of Pittsburgh, *Otolaryngol. Head Neck Surg*. 1996; 115: 94-97.
14. Garavello W, Romagnoli M, Sordo L, et al. Incidence of unexpected malignancies in routine tonsillectomy specimens in children, *Laryngoscope*. 2004; 114: 1103-1105.
15. Starry A. Pathology of the tonsil with statistical report and microscopic study, *Ann. Otol. Rhinol. Laryngol*. 1939; 48: 346-358.
16. Daneshbod K, Bhutta R, Dodagar R. Pathology of tonsils and adenoids: a study of 15,120 cases, *Ear Nose Throat J*. 1980; 59: 466-467.
17. Barnes L. *Surgical Pathology of the Head Neck*, 2nd ed. New York: Marcel Dekker Inc. 2001; 1: 254-257.
18. Ridgway D, Wolff LJ, Neerhout RC, et al. Unsuspected non-Hodgkin's lymphoma of the tonsils and adenoids in children. *Pediatrics*. 1987; 79: 399-402.
19. Dohar JE, Bonilla JA. Processing of adenoid and tonsil specimens in children a national survey of standard practices

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- and a five-year review of the experience at the Children's Hospital of Pittsburgh. *Otolaryngol Head Neck Surg* .1996; 115: 94-97.
20. Alvi A, Vartanian AJ. Microscopic examination of routine tonsillectomy specimens is it necessary *Otolaryngol Head Neck Surg*. 1998; 119: 361-363.
 21. Strong EB, Rubinstein B, Senders CW. Pathologic analysis of routine tonsillectomy and adenoidectomy specimens. *Otolaryngol Head Neck Surg*. 2001; 125: 473-477.
 22. Williams MD, Brown HM. The adequacy of gross pathological examination of routine tonsils and adenoids in patients 21 years old and younger. *Hum Pathol*. 2003; 34: 1053-1057.
 23. Rokkjaer MS, Klug TE. Malignancy in routine tonsillectomy specimens: a systematic literature review. *European Archives of Oto-Rhino-Laryngology*. 2014; 271: 2851-2861.