



Is diagnostic tonsillectomy indicated in all children with asymmetrically enlarged tonsils?

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Objectives. The aims of the study were: (i) to determine the necessity for diagnostic tonsillectomy in children with asymmetrically enlarged tonsils; (ii) to determine the accuracy of clinical assessment of tonsillar asymmetry; and (iii) to determine how to manage children with clinical tonsillar asymmetry in a developing-world practice.

Methods. A prospective study was carried out at Red Cross War Memorial Children's Hospital in Cape Town, over an 8-month period. All children undergoing tonsillectomy or adenotonsillectomy had a clinical assessment of tonsil symmetry done, and all tonsil and adenoid specimens were examined histologically. The maximum diameter and volume of the resected tonsils were measured. A comparison was done of true tonsil asymmetry in patients with asymmetrical tonsils and a subgroup of matched controls with symmetrical tonsils.

Results. A total of 344 tonsils were analysed (172 patients). The 13 patients (7.6%) diagnosed as having clinically asymmetrically enlarged tonsils had no significant pathological

diagnosis. In the patients with symmetrical tonsils there were 2 abnormal pathological findings (tuberculosis of the adenoids and T-cell lymphoma of the tonsils and adenoids).

In the clinically asymmetrical tonsil group, true tonsillar asymmetry was 3 mm (maximum diameter), and 2.2 cm³ (volume), compared with 1.9 mm and 1.5 cm³ in the symmetrical tonsil group. When patients with clinical tonsillar asymmetry and symmetry were compared, the difference in maximum diameter ($p = 0.62$) and volume ($p = 0.73$) was not significantly different.

Conclusions. Clinical tonsillar asymmetry is usually apparent rather than real. The incidence of significant pathology in children with asymptomatic, asymmetrical tonsils is low. Diagnostic tonsillectomy is indicated in children with asymmetrically enlarged tonsils associated with constitutional symptoms, cervical lymphadenopathy, rapid tonsil enlargement or significant tonsillar asymmetry.

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Tonsillectomy with or without adenoidectomy is one of the most commonly performed surgical procedures in children.¹ Common indications are recurrent tonsillitis, obstructive sleep apnoea, peritonsillar abscess, or suspicion of a serious underlying disorder. The major pathology to be concerned about in children is tonsillar lymphoma, usually the non-Hodgkin's type.^{2,3} In adults the most common tonsillar malignancy is squamous cell carcinoma, accounting for 85 - 90% of cases.⁴

Asymmetrically enlarged tonsils are one of the features of serious pathology, but this is usually associated with other suspicious features like cervical lymphadenopathy and systemic symptoms.⁵⁻⁸ In South Africa and other developing-world countries where there is a high incidence of HIV and tuberculosis (TB), adenotonsillar TB also needs

to be considered. The question arises whether diagnostic tonsillectomy is indicated in all children with asymmetrically enlarged tonsils, especially in the case of children who are asymptomatic.

If management is to be based on tonsillar asymmetry, then it is important to know whether clinical asymmetry is a true reflection of tonsil size. Most previous studies^{6,7} have questioned the accuracy of clinical assessment of true tonsillar asymmetry. It has been suggested that asymmetry of the oropharyngeal anatomy may account for apparent tonsillar asymmetry.^{5,6}

The recent literature favours a period of observation in patients with asymmetrical tonsillar enlargement, unless other suspicious features of malignancy are present.^{5,7,8} In such cases diagnostic tonsillectomy is mandatory.

Objectives

The aims of the study were: (i) to determine the incidence of significant pathology in children with clinically asymmetrically enlarged tonsils; (ii) to determine the necessity for diagnostic tonsillectomy in children with clinically asymmetrically enlarged tonsils; (iii) to determine the accuracy of clinical assessment of tonsillar asymmetry; and (iv) to determine how to manage children with clinical tonsillar asymmetry in a developing-world practice.

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Material and methods

We conducted a prospective controlled study at Red Cross War Memorial Children's Hospital in Cape Town, South Africa over an 8-month period, from June to September 2004 and from October 2005 to January 2006. All paediatric patients (< 12 years old) undergoing tonsillectomy or tonsillectomy and adenoidectomy (T&A) during this period were included in the study. At preoperative clinical assessment the tonsils were evaluated and any asymmetry was noted. The following clinical data were also recorded: indications for surgery, known TB contacts, presenting symptoms (presence of nasal obstruction, nasal discharge, and sore throat), and constitutional symptoms (weight loss/poor weight gain or fevers). Each patient had a full head and neck examination done and the presence and size of cervical lymphadenopathy, tonsil size, and any visible lesions on the tonsils were recorded. Tonsil size was graded according to the grading system suggested by Friedman *et al.*:⁹ grade I tonsils are in the tonsillar fossa, barely seen behind the anterior pillars; grade II tonsils are visible behind the anterior pillars; grade III tonsils extend three-quarters of the way to the midline; and grade IV tonsils, also known as 'kissing' tonsils, completely obstruct the airway.

Tonsillectomy or T&A was done by means of dissection or bipolar diathermy. The tonsils were labelled as left or right, and sent for pathological examination. The resected tonsils were examined macroscopically and microscopically using light microscopy. Each tonsil was measured to determine its maximum diameter. Length, width and depth of the tonsils were also determined, in order to calculate tonsil volume.

Patients with clinically asymmetrically enlarged tonsils and patients with clinically symmetrically enlarged tonsils were compared in terms of clinical data and histological findings. A further comparison was done between patients with clinically symmetrically enlarged tonsils matched for age, sex, indications for surgery and histological diagnosis in terms of true tonsil size and degree of asymmetry. Statistical analysis was done and results were considered significant if $p < 0.05$.

Results

A total of 344 tonsils were analysed (172 patients). The mean age of patients was 5.6 years (range 1 - 12 years). There were 103 males and 69 females (1.5:1). Thirteen patients (7.6%) had clinically asymmetrically enlarged tonsils. A comparison between this group and patients with clinically symmetrically enlarged tonsils is summarised in Table I. Tonsillar symmetry was not correlated with gender ($p = 0.33$). The indications for surgery were mainly recurrent tonsillitis and/or obstructive sleep apnoea. Only 2 of the asymmetrically enlarged tonsil group underwent tonsillectomy for biopsy purposes. The remaining 11 had other indications for surgery, with the asymmetry noted as an incidental finding.

The tonsillar histology is given in Table I. Two patients (1.2%) had significant pathological diagnoses, i.e. TB of the adenoids, and T-lymphoblastic lymphoma of both tonsils and adenoids. Neither of these patients had clinical asymmetry of the tonsils.

We compared the clinical findings for the clinically asymmetrically and symmetrically enlarged tonsil groups. The patient with tonsillar lymphoma had symptoms of weight loss, fever, rapid onset of upper airway obstruction, and significant cervical lymphadenopathy (nodes > 5 cm). Tonsil size was grade IV and the tonsils were clinically symmetrically.

In order to determine the accuracy of clinical evaluation of tonsil size and asymmetry, we compared the true tonsil size (maximum diameter and volume), as well as size difference, between the clinically asymmetrically and symmetrically enlarged tonsil groups. We then calculated the degree of asymmetry between the two tonsils. In order to improve the accuracy of this analysis we compared the asymmetrically enlarged tonsil group with a group of patients with symmetrically enlarged tonsils matched for age, sex, indications for surgery and pathology (Table II). There was no statistically significant difference in the degree of asymmetry between the two groups in terms of true tonsil size ($p = 0.62$) or volume ($p = 0.73$).

Table I. Comparison of clinicopathological findings in children with asymmetrically and symmetrically enlarged tonsils

Clinical findings	Asymmetrically enlarged tonsils	Symmetrically enlarged tonsils
Total (N (%))	13 (7.6)	159 (92.4)
Average age (yrs)	7	5.5
Sex (N)	Female 9/male 4	Female 60/male 99
F:M ratio	2.25:1	0.6:1
Pathology (N (%))		
Reactive lymphoid hyperplasia	10 (77)	137 (86)
Acute tonsillitis	1 (7.7)	2 (1.3)
Reactive lymphoid hyperplasia and actinomycoses	2 (15.4)	18 (11)
Tuberculosis of adenoids	0	1 (0.6)
T-cell lymphoma of tonsils and adenoids	0	1 (0.6)



When we compared the left and right tonsils in the clinically asymmetrical group, 31% were the same size, the clinically smaller tonsil was in fact the bigger tonsil in 38% of cases, and the clinically larger tonsil was the bigger tonsil in only 31% of patients. In the patient with lymphoma, the tonsils were clinically and pathologically the same size.

Discussion

Indications for tonsillectomy for biopsy purposes in patients with asymmetrically enlarged tonsils are controversial. It has been suggested that all unilaterally enlarged tonsils be excised and submitted for histological examination in order to avoid missing a significant underlying disorder.¹⁴ The main pathology to be concerned about is lymphoma, but granulomatous diseases (e.g. TB and sarcoidosis), Epstein-Barr virus lymphoproliferative disorders, Langerhans cell histiocytosis, rhabdomyosarcoma and lipid storage disease are only some of the diseases that may involve the tonsils.¹⁰ In South Africa and other developing-world countries the high incidence of HIV infection and associated TB raises concerns about adenotonsillar TB. The probability of a significant underlying disorder must be weighed against the morbidity and risks of tonsillectomy.

The incidence of clinically asymmetrical tonsillar enlargement is quite high; Cinar⁵ reported a rate of 6.7% among children undergoing tonsillectomy, while Harley⁶ reported 18.2%. The present study revealed that 7.3% of children undergoing tonsillectomy had clinical asymmetry.

When a correlation was made between clinical and true asymmetry, we found no statistical difference in the degree of asymmetry in the clinically asymmetrical ($p = 0.62$) and clinically symmetrical ($p = 0.73$) groups.

In only 31% of children was the clinically larger tonsil truly

the larger of the two tonsils. Spinou *et al.*⁷ similarly found the clinically enlarged tonsil to actually be the smaller tonsil in 17% of cases, and that in 40% of cases the tonsils were of equal size.⁷ Berkowitz and Mahadevan⁸ found that the tonsils were the same size in 52% of clinically asymmetrical tonsils.

In a study of tonsillar fossa depth in children undergoing T&A, Harley⁶ reported a statistically significant difference in tonsillar fossa depth in children with asymmetrical tonsils, and no statistical difference in the degree of tonsil asymmetry in the two groups. He states that tonsillar asymmetry in children may be an illusion secondary to a difference in the depth of the tonsillar fossa. Others¹¹ have stated that the most common cause for apparent unilateral tonsillar enlargement is asymmetry of the mucosa of the tonsillar pillars. It has been suggested that such apparent asymmetry is common, but that making the patient gag during the examination can make the distinction.

We found no abnormal pathology in any patient with clinically asymmetrical tonsils. The only patient with lymphoma had bilaterally enlarged tonsils, but importantly, had other features suspicious of lymphoma. In a review of 46 children with unilateral tonsillar enlargement Berkowitz and Mahadevan⁸ found no malignancy. None of the patients had systemic symptoms or significant lymphadenopathy. They undertook a comparison with 7 children diagnosed with tonsillar lymphoma. These children all had progressive tonsillar enlargement over a period of 6 weeks or less and 86% had symptoms that included night sweats, fevers, significant cervical lymphadenopathy or hepatosplenomegaly. They concluded that diagnostic tonsillectomy should be performed in asymmetrically enlarged tonsils only where there is a history of progressive tonsillar enlargement, systemic symptoms, and suspicious appearance of the tonsils, cervical lymphadenopathy or hepatosplenomegaly. Harley,⁶ Cinar⁵ and

Table II. Comparison of pathological tonsil size inpatients with asymmetrically enlarged tonsils and matched controls with symmetrically enlarged tonsils

Pathology	Asymmetrically enlarged tonsils	Symmetrically enlarged tonsils (matched controls)	<i>p</i> -value
Total (N)	13	24	
Average age (yrs)	7	7	
Sex (N)	Female 9/male 4	Female 17/male 7	
F:M ratio	2.25:1	2.4:1	
Pathology (N (%))			
Reactive lymphoid hyperplasia	10 (77)	21 (87)	
Acute tonsillitis	1 (7.7)	1 (4.2)	
Reactive lymphoid hyperplasia and actinomycosis	2 (15.4)	2 (8.3)	
Tonsil size			
Average maximum diameter (mm)	26	24.5	0.83
Average volume (cm ³)	6.4	6.8	0.91
Average asymmetry in maximum diameter (mm)	3 (range 0 - 10)	1.9 (range 0 - 10)	0.62
Average asymmetry in volume (cm ³)	2.2 (range 0 - 5)	1.5 (range 0 - 4.5)	0.73



Spinou *et al.*⁷ also reported no significant pathology in patients with asymptomatic, asymmetrically enlarged tonsils. They all concluded that tonsillar asymmetry in children without suspicious features (constitutional symptoms and cervical lymphadenopathy) may not indicate a malignancy. A period of observation has been suggested by many other authors.^{5,7,8}

In adults the situation is different, as squamous cell carcinoma of the tonsil comprises approximately 85% of malignant tonsillar neoplasms, and typically presents as unilateral enlargement or mucosal ulceration.⁵ Spinou *et al.*¹¹ reported 23 malignancies in 98 adults with unilateral tonsillar enlargement. However in each of these cases there was a high degree of clinical suspicion for malignancy. This included ulceration, male gender, lymphadenopathy, age \geq 45 years, smoking and weight loss. Rapid growth was a typical feature of lymphoma. They concluded that unnecessary tonsillectomy might be done in adults with unilateral tonsillar enlargement if this is not accompanied by features suspicious of malignancy. Reiter *et al.*¹² reported 2 cases of tonsillar lymphoma in 31 adults with tonsillar asymmetry, and Dohar and Bonilla¹⁰ reported 1 case of lymphoma in 2 012 cases of adult tonsillectomies. The lymphoma was suspected pre-operatively because of significant tonsillar asymmetry.

Conclusions

Clinical tonsillar asymmetry occurs commonly in children. Asymmetry is usually apparent rather than real and may be the result of asymmetry of the depth of the tonsillar fossa or of the

tonsillar pillars. Because the incidence of significant pathology in asymptomatic asymmetrical tonsils in children is very low, an initial period of observation may be indicated. Diagnostic tonsillectomy is indicated in children with asymmetrically enlarged tonsils associated with constitutional symptoms, cervical lymphadenopathy, rapid tonsil enlargement or significant tonsillar asymmetry.

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