Asymmetric Tonsil Size in Children

Earl H. Harley, MD

Objective: To assess the clinical implications of asymmetrically enlarged tonsils in children.

Design: A prospective controlled study of asymmetric tonsil size in children scheduled for tonsillectomy with or without adenoidectomy. Data were recorded on tonsil size and position, tonsillar fossa depth, degree of asymmetry, and pathological findings. Control patients were matched for age, sex, race, diagnosis, and surgical procedure.

Patients: A total of 258 children, aged 2 to 18 years, scheduled for tonsillectomy with or without adenoidectomy during a 27-month period.

Setting: A tertiary care academic medical center.

Results: Forty-seven children (18.2%) were determined to have asymmetric tonsils. There were 43 matched controls with symmetric tonsils. Three-dimensional quantitative measurements of the resected tonsils revealed little or no actual asymmetry in tonsil size even though preoperative intraoral observations gave the impression that one tonsil was larger than the other. Statistically, tonsillar asymmetry was more apparent than real. When measured by volume, there was asymmetry in both groups. However, there was no statistical difference in the degree of asymmetry between the groups ($P = .50$). A difference in the depth of the tonsil fossa contributed to the putative asymmetry ($P < .001$). No malignant neoplasms were identified on microscopic examination in either group.

Conclusions: Tonsillar asymmetry in children may often be an illusion secondary to a difference in the depth of the tonsillar fossa. Tonsillar asymmetry in children in the absence of other findings such as ipsilateral cervical adenopathy or other constitutional symptoms may not indicate a malignancy.


Lymphoid tissue in the Waldeyer ring is sparse at birth. This is followed by a period of proliferation and eventual involution.\(^1\) The proliferation is a true hyperplasia induced by immunologic activity, notably expansion of B cells.\(^2,3\) Occasionally there is unilateral tonsillar enlargement or asymmetry. Significant asymmetry of the tonsils, especially if there is rapid enlargement, may portend a serious underlying disorder such as lymphoma, lipid storage disease, or Langerhan cell histiocytosis.\(^2,4\) In adults, there is a fair degree of consensus on the need for tonsillectomy with microscopic examination of an asymmetric or unilaterally enlarged tonsil.\(^5,6\) The evaluation and treatment of children with asymmetrically enlarged tonsils continues to be an area of debate. This study seeks to elucidate and further the discussion by prospectively examining comparative tonsil size in a cohort of children who have indications for surgery other than a suspected tumor.

RESULTS

Two hundred fifty-eight children underwent tonsillectomy with or without adenoidectomy during the study period. Forty-seven children were determined to have some degree of tonsillar asymmetry (18.2%). The age range for the study group was 2 to 13 years. There were 23 boys aged 2 to 10 years with a mean age of 5.3 and a median age of 5 years. There were 24 girls aged 2 to 13 years with a mean age of 5.9 and a median age of 5.5 years.

The indications for surgery for the boys and girls in the asymmetric group were similar. Fourteen boys and 15 girls had surgery for airway symptoms (62%), 6 boys and 6 girls had surgery for a combination of airway symptoms and recurrent tonsillitis (26%), while only 3 girls and 3 boys had surgery for recurrent tonsillitis (13%).

FROM THE DEPARTMENT OF OTOLARYNGOLOGY–HEAD AND NECK SURGERY, GEORGETOWN UNIVERSITY HOSPITAL, WASHINGTON, DC.

©2002 American Medical Association. All rights reserved.
PATIENTS AND METHODS

Prospective data were recorded on children aged 2 to 18 years undergoing tonsillectomy with or without adenoidectomy during the study period. Children with an asymmetric tonsillar presentation were eligible to be included in the study group. Children with a history of human immunodeficiency virus–acquired immunodeficiency syndrome, immunosuppression, transplantation, suspected current or previously treated malignancy, and Down syndrome or other craniofacial disorders were excluded. A history and preoperative physical examination results were recorded on all children. Demographic information was collected, including age, sex, and race. The indication for surgery was recorded. After patients were under anesthesia, they were placed in suspension using Crowe-Davis or a McVay mouth gag. Once the child was suspended, details of tonsillar size were noted using the classification method of Brodsky: 4+ if the tonsils occupied greater than 75% of the airway, 3+ if they occupied 50% to 75% of the airway, 2+ if they occupied 25% to 50% of the airway, and 1+ if they occupied less than 25% of the airway.2 Tonsillar asymmetry was determined to be present when there was at least a 4+ difference in the 2 tonsils. Also, the degree of tonsillar fossa depth was assessed.

All tonsils were removed by a cautery technique. The resected specimens were labeled as to the proper side and submitted in a fresh state for pathological examination. All specimens were measured for length, width, and depth. Both gross and microscopic features were recorded.

A control group of children with apparent symmetric tonsils who were undergoing tonsillectomy with or without adenoidectomy was matched by age, sex, race, indications for surgery, and surgical procedure performed. Similar measurements and pathologic assessments were made for the control group. Statistical analysis was performed with a commercially available software package (Instat2, San Diego, Calif). P < .05 was determined to be significant.

There were 43 matched controls who had the same indications for surgery and underwent the same procedures during the study period. Children in the control group were aged 2 to 11 years. There were 24 girls aged 2 to 11 years with a mean age of 5.8 years and a median age 5.5 years. There were 19 boys aged 2 to 11 years with a mean age of 5.2 years and a median age of 5 years. Fifteen girls and 14 boys had surgery for airway symptoms (67%), 7 girls and 2 boys had surgery for a combination of airway symptoms and recurrent tonsillitis (21%), while 2 girls and 3 boys had surgery for recurrent tonsillitis (12%).

No child was determined to have more than 25% degree of asymmetry as measured by the method of Brodsky.3 When measured by volume, there were no statistical differences in the size of the tonsils in the 2 groups (P = .50). The apparent asymmetry resulted from the depth of the tonsillar fossae (P < .001).

No child was determined to have significant cervical adenopathy or hepatosplenomegaly. All children underwent tonsillectomy with or without adenoidectomy.

Neither group demonstrated malignancy or unusual pathological findings on histologic examination. Actinomyces species were noted in both the study group and the control group specimens, but there was not a statistical difference.

The central issues in children with asymmetric or unilateral tonsillar enlargement are the possibility of a significant underlying disorder and whether tonsillectomy is warranted. Certain children are predisposed to tonsillar malignancy. These include immunosuppressed children and those who have undergone transplantation. There is no argument that in such patients any tonsillar asymmetry may portend serious pathological conditions. Also, if the tonsil has an unusual color or appearance, tonsillectomy is prudent. The dilemma exists when a child is healthy except for symptoms related to recurrent throat infections or obstructive breathing.

In the present study there were no cases of significant unilateral tonsillar enlargement. Only mild tonsillar asymmetry was demonstrated. Asymmetry appeared to be more a function of the depth of the tonsillar fossa instead of an indication of a true difference in size. Comparison of the study patients (asymmetric group) with the control patients (symmetric group) illustrated this phenomenon effectively. Furthermore, even in tonsils that clinically appeared symmetric, there often was some asymmetry. When comparing the clinically asymmetric group with the clinically symmetric group, there was no statistical difference in the degree of asymmetry. Asymmetry occurred in children whose indications for surgery were both infection as well as obstruction. The only difference was in the relative size of the tonsils. It was also observed that children whose only indication for surgery was infection had small but asymmetric tonsils, while children with obstructive symptoms with or without a history of recurrent infection had moderated to marked enlargement of the tonsils. These findings were noted in both the control and study groups. No evidence of lymphoma or other significant disorder was noted in either group.

The possibility of a lymphoma is the greatest concern in assessing children with asymmetric tonsils. Most lymphomas of the tonsils are the non-Hodgkin type. These are usually B cell in origin. Rarely are patients with tonsillar lymphoma asymptomatic. The symptoms include sore throat, dysphagia, and otalgia. Cervical adenopathy is also often present. In a retrospective study of children aged 2 to 13 years, Berkowitz and Mahadevan4 failed to find any lymphoma in the absence of significant systemic symptoms, cervical adenopathy, or hepatosplenomegaly. They reviewed the records of 46 Australian children with unilateral tonsil enlargement who underwent tonsillectomy for the purpose of biopsy. They compared these 46 children with 7 children who had tonsillar lymphoma. Fewer than one half of the 46 had any otolaryngologic symptoms and none had systemic symptoms or cervical adenopathy. In contrast, 86% of the children...
with lymphoma showed symptoms. These included night sweats, fevers, significant cervical adenopathy, and hepatosplenomegaly.\(^3\) Reiter et al\(^6\) reviewed 1280 patients 18 years and older who underwent tonsillectomy. In 31 cases of tonsillar asymmetry there were 2 cases of malignant lymphoma. Dohar and Bonilla\(^5\) reviewed 2012 adeno-tonsillectomies or tonsillectomies and discovered only 1 case of lymphoma. The lymphoma was suspected before surgery because of “dramatic asymmetry between the right and left tonsils.” In a retrospective study of adults and children, Alvi and Vartanian\(^7\) did not find any significant disease in 3 cases of tonsillar asymmetry. Their study revolved around the issue of microscopic examination of resected tonsils. They concluded that microscopic examinations should be carried out only in cases of gross asymmetry.

### CONCLUSIONS

Tonsillar asymmetry is usually secondary to benign hyperplasia. The asymmetry is often an illusion created by a difference in the depth of the tonsillar fossae. However, rapid onset of unilateral tonsillar enlargement which is associated with fever, weight loss, night sweats, symptoms in the aerodigestive tract, significant cervical adenopathy, and/or hepatosplenomegaly may indicate a serious underlying disorder such as lymphoma or other serious disease processes. Children with unusual circumstances such as having had transplantation or with immunosuppression may be at higher risk for tonsillar disorders.

### RECOMMENDATIONS

Based on these conclusions, the following recommendations are suggested:

- Children may be observed if there is only mild asymmetry and there are no other indications for surgery such as recurrent tonsillitis or obstructed breathing.
- Tonsillectomy should be strongly considered in children who have significant tonsillar asymmetry associated with rapid onset of enlargement, prominent cervical adenopathy, and/or hepatosplenomegaly with or without constitutional symptoms such as weight loss, fever, and night sweats.
- Children with unilateral tonsillar enlargement who have significant dysphagia and other aerodigestive symptoms should be considered for tonsillectomy.
- Surgery is warranted for any tonsillar asymmetry or rapid tonsillar enlargement in transplant recipients or immunosuppressed patients.

Accepted for publication December 5, 2001.

This study was presented in part at the American Society of Pediatric Otolaryngology meeting, Palm Desert, Calif, April 29, 1999.

Corresponding author and reprints: Earl H. Harley, MD, Georgetown University Hospital, Department of Otolaryngology–Head and Neck Surgery, 3800 Reservoir Rd NW, Washington, DC 20007 (e-mail: Harleye@gunet.georgetown.edu).

### REFERENCES