

# The Role of Tonsillectomy in Pediatric IgA Nephropathy

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**Objectives:** To review pediatric cases of IgA nephropathy (IgAN) in 6 patients who underwent tonsillectomy and had marked improvement of their renal symptoms and to review the appropriate indications for tonsillectomy for this disease.

**Design:** Retrospective case series.

**Setting:** Academic medical center.

**Patients:** Six children (age range, 8-15 years) with renal biopsy-proved IgAN who were referred by a pediatric nephrologist for recurrent tonsillitis.

**Intervention:** Tonsillectomy.

**Main Outcome Measures:** Resolution of clinical features of IgAN, including proteinuria, gross and microscopic hematuria, and stabilization of renal function.

**Results:** The 6 patients in this series had marked clinical and laboratory improvement of their nephropathy.

**Conclusions:** In a select group of pediatric cases of IgAN with mild to moderate disease and recurrent tonsillitis, tonsillectomy can be a useful adjuvant treatment to improve urinary symptoms and renal function. IgA nephropathy is a common indication for tonsillectomy in Japan but is seen less often in the United States. Otolaryngologists should be aware of this indication for tonsillectomy.

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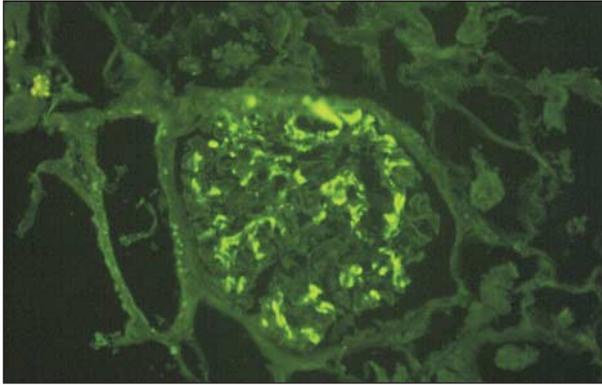
**I**GA NEPHROPATHY (IGAN), OR Berger disease, is an immune complex-mediated glomerulonephritis that was first described by Berger and Hinglais<sup>1</sup> in 1968. The disorder, which is now generally known to be the most common form of primary glomerulonephritis in the world,<sup>2,3</sup> is defined immunohistologically by the presence of glomerular IgA deposits on immunofluorescence staining (**Figure**). It can occur at any age but most commonly has its clinical onset in the second and third decades of life. It is more common in males than females, and its highest prevalence is in Asia, which is thought to be partly attributable to the increased use of renal biopsy in countries such as Japan.<sup>4</sup> The cause of IgAN is still unknown. Patients with IgAN frequently present initially with macroscopic hematuria (tea-colored urine) after upper respiratory infections, including tonsillitis. This presentation is more common in patients younger than 40 years, while older patients may present with abnormal sediment in the urine and proteinuria without symptoms.<sup>4</sup>

Multiple modes of treatment have been suggested for IgAN, although there is no known definitive cure for the disease. Angiotensin-converting enzyme inhibitors, corticosteroids, and n-3 polyunsaturated fatty acids (fish oil supplements) have all been used as therapies; however, their effectiveness has been studied primarily in the adult population.<sup>4</sup> Tonsillectomy is commonly practiced in Japan as a part of the therapy for this disorder, but it is less commonly performed for this indication elsewhere.<sup>5</sup> We describe our experience with 6 pediatric patients at our institution who underwent tonsillectomy and review the role of, and indications for, tonsillectomy in the treatment of this disease.

## METHODS

This study was approved by the institutional review board of Loyola University Medical Center, Maywood, Illinois. We undertook a retrospective case series analysis of all pediatric patients (age <18 years) who were referred to the Department of Otolaryngology-Head and Neck Surgery from the Division of Nephrology, Department of Pediatrics, from January 1990 to June 2007. Six patients (4 girls and 2 boys; age

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**Figure.** Immunofluorescent staining reveals the deposition of IgA immune complexes in the glomerulus.

**Table. Clinical Characteristics of Study Patients**

Patient No./Sex/ Age at Onset, y	Symptoms	Outcome
1/F/14	H	Complete resolution
2/F/8	H	Complete resolution
3/M/12	H, HSP	HSP resolved, less frequent H
4/M/15	H, P, HTN	Complete resolution
5/F/8	H, P	Complete resolution
6/F/12	H	Complete resolution

Abbreviations: H, hematuria; HSP, Henoch-Schönlein purpura; HTN, hypertension; P, proteinuria.

range, 8-14 years) who had biopsy-proved IgAN and underwent tonsillectomy were identified. All 6 patients had a minimum of 14 months of follow-up after their tonsillectomy, and their medical charts were reviewed for recurrence of disease symptoms as well as for any complications related to the procedure.

## RESULTS

The indication for tonsillectomy in all 6 cases was recurrent tonsillitis; no procedures were performed because of obstructive symptoms. The patients had between 3 and 6 documented cases of tonsillitis in the year preceding their tonsillectomy. Cultures were not obtained in all cases. The patients were diagnosed as having IgAN an average of 6 months before undergoing tonsillectomy. One patient had IgAN as a component of his Henoch-Schönlein purpura. The patients experienced an average of 2.5 episodes of gross hematuria after episodes of tonsillitis and before tonsillectomy. One patient had received an angiotensin-converting enzyme inhibitor for hypertension, and 1 patient had begun oral prednisone therapy. No other patients had received medical treatment for their IgAN before tonsillectomy. With a mean follow-up of 36 months, 5 of the 6 patients had no further episodes of hematuria. The 1 patient with Henoch-Schönlein purpura had resolution of his purpura, and the frequency of his episodes of hematuria decreased. None of the 6 patients has required any medical therapy since undergoing tonsillectomy. The **Table** lists the characteristics of the 6 patients. No complications from the tonsillectomy were noted in any of the patients.

Since the initial description of IgAN in 1968,<sup>1</sup> much has been learned about its presentation and clinical characteristics, although its underlying etiology is still unknown. It has a variable clinical course and was initially thought to be a benign disorder, but it is now known that 15% to 40% of cases proceed to end-stage renal disease after several decades.<sup>6</sup> The most common symptom is hematuria, but proteinuria and hypertension may also be present. All 6 patients in this series had macroscopic hematuria as the presenting symptom of their disease. In all cases, the hematuria resolved and then recurred with subsequent episodes of tonsillitis. This typical recurrence is what separates IgAN clinically from acute poststreptococcal glomerulonephritis, which rarely recurs. Also, poststreptococcal glomerulonephritis typically has a 7- to 21-day latency period between the streptococcal infection and presentation, while the hematuria of IgAN is concurrent with the upper respiratory infection. After 2 or more episodes of gross hematuria after tonsillitis, all of our patients underwent renal biopsy to confirm the diagnosis of IgAN.

Microscopic examination of renal tissue reveals the mesangial deposition of IgA, which is the most abundant type of antibody in the body and is primarily responsible for mucosal immunity. There are 2 forms of the antibody: serum and secretory. Both forms are produced by B cells throughout the mucosal tract, including the tonsils. Tonsillectomy has previously been shown to decrease levels of IgA antibody in the serum.<sup>7</sup> Furthermore, compared with the tonsils of nondiseased controls, those of patients with IgAN demonstrate abnormalities.<sup>8</sup> Normal human tonsils contain 60% IgG-secreting plasma cells and 40% IgA-secreting plasma cells, while in tonsils of patients with IgAN these proportions are reversed.<sup>9</sup>

Because tonsillar tissue produces IgA and because the onset of symptoms of IgAN often coincides with mucosal infection, studies have been performed to explore the effectiveness of tonsillectomy as an adjuvant therapy.<sup>10-12</sup> One study demonstrated the effectiveness of tonsillectomy in combination with steroid pulse therapy, with very favorable results.<sup>12</sup> There have been other reports describing no change after tonsillectomy.<sup>13</sup> Most studies to date have involved mixed populations of adult and pediatric patients with varying degrees of disease severity.

The indications for tonsillectomy in patients with IgAN primarily include the deterioration of urinary findings after tonsillar infection as well as mild renal damage. It should be noted that all patients in our series had recurrent tonsillitis; none of the tonsillectomies were performed in children with solely obstructive symptoms. All 6 patients met the criteria for tonsillectomy independent of their renal disease, having had more than 6 episodes of acute tonsillitis in 1 year or 3 episodes in 3 consecutive years. Previous studies have shown that patients with long-standing disease are less likely to benefit from tonsillectomy.<sup>10</sup> Appropriate communication between nephrologists and otolaryngologists is crucial to ensure timely evaluation of these patients.<sup>5</sup> In our series, all 6 patients were referred less than a year after their first pre-

sensation with hematuria. Early referral led to the favorable results in 5 of the 6 patients, with complete resolution of symptoms.

In conclusion, IgAN is a disease with a varied clinical course and one in which no standard therapy has been established. Previous studies examining the role of tonsillectomy in this disease have shown favorable results. Our series of 6 patients showed excellent resolution of symptoms. Timely referral of children with appropriate indications for tonsillectomy is critical. Randomized controlled studies are needed to better establish the efficacy of tonsillectomy and to better define its use, but the practicing otolaryngologist should be aware of this indication for tonsillectomy.

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**Author Contributions:** Dr Mariotti had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. *Study concept and design:* Agrawal and Hotaling. *Acquisition of data:* Mariotti. *Analysis and interpretation of data:* Mariotti and Hotaling. *Drafting of the manuscript:* Mariotti and Hotaling. *Critical revision of the manuscript for important intellectual content:* Agrawal and Hotaling. *Administrative, technical, and material support:* Mariotti and Agrawal. *Study supervision:* Agrawal and Hotaling.

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