

Previous ear, nose and throat surgery in children presenting with allergic perennial rhinitis

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Summary

Children with allergic perennial rhinitis had a four-fold greater likelihood of having had an ear, nose and throat (ENT) operation than children with orthopaedic problems. Whilst the patients who had ENT operations had significantly lower serum IgA and IgE levels than the non-operated patients, there was no difference in clinical features of atopy or allergy skin-test responses between the two groups of rhinitic patients. Forty per cent of the perennial rhinitics had an improvement in symptoms following ENT operations, whereas 90% improved on medical therapy. Thus, patients with perennial rhinitis should have allergy investigations and the benefit of medical treatment prior to consideration for surgery.

Introduction

The number of adenoidectomies and/or tonsillectomies performed in children has diminished considerably in the last decade, with the appreciation that these operations have little influence on the natural history of recurrent upper respiratory tract infections [1]. However, some children are still submitted to ENT operations because their symptoms are presumed to be due to mechanical obstruction in the upper respiratory tract. Patients with perennial allergic rhinitis have nasal obstruction and discharge sometimes associated with serous otitis media and sinusitis. We have investigated the frequency with which such patients had been submitted to ENT operations and have examined the factors associated with the apparent need for surgery.

Subjects and methods

All children (new referrals and follow-up patients) who attended the St Mary's Hospital Paediatric Allergy Clinic, in a 24 month period, with perennial rhinitis as their predominant problem and positive skin-test responses to at least one common inhalant allergen were studied. One hundred and four such patients aged between 2 years and 15 years (mean 9.9 years) were identified. Information was derived from case notes

Table 1. Range of ENT operations performed on patients with allergic perennial rhinitis and patients attending orthopaedic out-patient departments

	Allergic perennial rhinitis patients (<i>n</i> = 104)	Orthopaedic patients (<i>n</i> = 68)
Adenoidectomy	7	1*
Tonsillectomy	10	3
Adenotonsillectomy	20†	1
Sinus washout and/or nasal cautery	8‡	0
Grommet insertion	2	2
Total: any ENT operation	41 (39%)	6 (8.8%)

* This patient had a simultaneous grommet insertion.

† Includes two patients who had adenoidectomy and tonsillectomy on separate occasions and one patient who had a grommet insertion at the same time.

‡ Includes five who had previous adenoidectomy and/or tonsillectomy.

retrospectively and subsequently all parents were asked to complete a questionnaire to elicit details of their condition and any operations performed.

All the patients had severe rhinitis present for at least 1 year (mean 5 years) with perennial blockage of the nose, often worse at night and associated with sneezing on arising in the morning. Sleep disturbances due to nasal blockage were common (56%).

A control group of sixty-eight children aged 1–16 years (mean age 8.2 years) attending orthopaedic clinics at St Mary's Hospital and The Hospital for Sick Children, Great Ormond Street, were also studied. Parents were asked to complete a similar questionnaire whilst waiting for their orthopaedic consultation. The sex distribution and age ranges of the two groups of children were similar.

Results

Forty-one of 104 (39%) perennial rhinitis patients had at least one ENT operation whilst only six of sixty-eight (8.8%) controls had a similar procedure. This was a highly significant difference ($\chi^2 = 19.4$ $P < 0.001$). Seven perennial rhinitis children had more than one separate operation, but this happened to none of the controls (Table 1).

Amongst the forty-one perennial rhinitis patients who had operations, twenty (49%) had clear symptoms of allergic rhinitis pre-operatively with bouts of sneezing, itchy nose and clear nasal discharge. Fifteen of these twenty reported no improvement in symptoms after an operation. Seventeen of the operated group had recurrent upper respiratory tract infection as the justification for operation and ten of these reported an improvement post-operatively, although some subsequently relapsed. In four, the timing of onset of symptoms in relation to operation or the justification for operation was not known.

A comparison of the perennial rhinitis patients who did, or did not, have an operation revealed no significant differences in age, sex ratio, severity of rhinitis or in the numbers with a seasonal exacerbation of symptoms, i.e., hayfever (49% and 51%, respectively); nocturnal or early morning exacerbations suggesting house dust mite

allergy (68% and 48%, respectively); other obvious atopic symptoms, such as asthma and/or eczema (63% and 78%, respectively); or a family history of atopy (78% and 78%, respectively). There were no significant differences between the two groups in terms of numbers of positive skin tests with a range of one to nine positive reactions and a mean of 4.1 per patient for both operated and non-operated patients.

Few patients had further investigations as this was not considered necessary clinically. However, ten operated and fourteen non-operated patients had immunoglobulin levels. All of these had normal immunoglobulin (Ig) G and M levels. When IgA levels were plotted against IgE levels as in the figure, the two groups of patients appeared quite distinct. The patients who had operations had significantly lower IgE levels ($P < 0.05$) and significantly lower IgA levels ($P < 0.02$) by Wilcoxon's rank sum test (Fig. 1).

Table 2 indicates the number of perennial rhinitis patients whose symptoms were improved by medical treatment. The vast majority (91%) experienced relief of symptoms on medical treatment. The table indicates only the most satisfactory regime and, therefore, most of the patients on nasal steroids had failed to respond to nasal sodium cromoglycate and anti-histamines in the past. In addition, all patients had received recommendation on appropriate allergen avoidance measures.

Discussion

Adenoidectomy and/or tonsillectomy is still widely performed in the hope of reducing a variety of upper respiratory tract symptoms. It remains one of the most frequent reasons for elective admission of a child to hospital. In Australia about 20% of children currently have this operation with figures of 14% for the U.S.A. and 5% for Sweden [1]. Our own control group had a rather low incidence of ENT procedures (8.8%). We suspect that this is rather lower than that which might be found in an unselected normal population. Most of our control group were children with chronic orthopaedic problems. One suspects that their rather more pressing and obvious symptoms diverted attention away from any minor upper respiratory tract symptoms that may otherwise have caused concern. Nevertheless, the 39% frequency of operations amongst the allergic perennial rhinitic patients was unaccountably excessive.

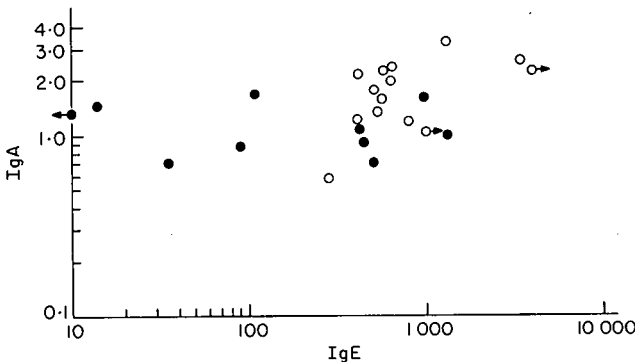


Fig. 1. Serum IgA plotted against total serum IgE in a group of twenty-four children with perennial allergic rhinitis, ten of whom had previously been submitted to an ENT operation (closed circles) whilst fourteen had no such operation (open circles). Arrows indicate values of IgE greater than or less than those apparent from the position on the graph.

Table 2. The most satisfactory or final treatment and its effect in 104 patients with allergic perennial rhinitis

	Very effective	Partially effective	Ineffective
Anti-histamines	5	2	0
Sodium cromoglycate $\pm$ anti-histamines	36	7	4
Nasal steroids $\pm$ anti-histamines	41	4	5

There is little correlation between the judgement of general practitioners, paediatricians and ENT surgeons on when tonsillectomy is justified [2,3]. However, a recent unique controlled study reported by twelve authors, which took 11 years to complete [4], suggested that benefit from tonsillectomy in patients selected on rigorous criteria with recurrent severe tonsillitis, was modest. Advantages over the non-surgical group were significant for 2 years but most non-operated patients during the period of observation had fewer than three episodes of infection per year, diminishing in frequency with time, and most were mild. This must be contrasted with a 14% incidence of surgery-related complications, which although treatable and self-limiting did lead to prolongation of hospitalization. A similar earlier study also produced some evidence that adenotonsillectomy reduced the incidence of sore throats for 1–2 years following an operation [5]. Nevertheless, the overall results suggest that the benefits of tonsillectomy may not be sufficient to justify the operations' risks and costs [6].

Surgery for glue ear has also been studied in controlled trials. Grommet insertion was not of any benefit in a 5 year follow-up study [7]. However, the effect of adenoidectomy was highly significant compared with a control group in a 1 year follow-up of chronic otitis media with effusion. Tonsillectomy conferred no additional benefit [8]. Recently Black has reported an unexplained epidemic of surgery for glue ear [9], much of which could be on undiagnosed allergic individuals.

There was a difference in perceived response to operations performed in our patients depending on the justification for the operation. Fifty-nine per cent of those with recurrent upper respiratory tract infections improved post-operatively, whilst only 25% of those who had primary symptoms of rhinitis were similarly improved. This must be compared with a 91% response to medical treatment amongst all the patients with perennial allergic rhinitis. It is, therefore, clear that many of these patients had unnecessary operations, and most had symptoms or family histories that were strongly suggestive of an allergic problem. We would suggest that patients with persistently blocked nose, nasal discharge, recurrent sinusitis and secretory otitis media should have allergy skin tests, and be given the benefit of medical treatment prior to any consideration of surgery.

Notwithstanding the clinical observations, a small sub-group of the patients who had operations were immunologically distinct from those who avoided an operation. Despite equivalent skin test responses the operated group had significantly lower total serum IgE and IgA levels. This is in keeping with another study that identified low IgA levels in patients being considered for tonsillectomy. This abnormality was not due to the operation itself as the low IgA levels were present both before and after tonsillectomy [10]. Whilst a low IgA level is sometimes associated with more frequent infections, ENT surgery is unlikely to make any difference to this recurrent problem. Furthermore, low IgA levels have been shown to predispose individuals to allergy [11].

Indeed, the Paradise *et al.* study [4] of tonsillectomy deliberately excluded patients with low IgA levels although, surprisingly, no mention is made of allergy as an exclusion criterion. Thus, treatment directed towards the allergy is more likely to be effective than surgery, and much of the confusion that exists about the value of adenotonsillectomy for upper respiratory tract disease may be unravelled by excluding allergic rhinitis sufferers.

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