The study group consisted of 465 patients who underwent adenotonsillectomy at University Hospital in Newark, NJ from March 2002 to April 2007. Of this group, we found that 93 children had asthma and 372 did not have asthma. The charts of the 93 children with asthma were reviewed for asthma control variables and constitute the main study group. We collected data for both groups of children to determine if there was a difference in postoperative respiratory complication rate and length of hospital stay. Both groups were similar in age and gender and obstructive sleep apnea (OSAS)/adenotonsillar hypertrophy (ATH) was the most common indication for adenotonsillectomy (Table 1).

There was no statistically significant difference in the length of hospital stay (LOS) postoperatively between the two groups (Table 1). There was a statistically significant decrease in the number of hospital visits postoperatively (p<0.01). Systemic steroid usage was significantly decreased postoperatively (p<0.01). Medication usage decreased significantly after surgery. There were significantly fewer daily medications required per patient following surgery (p<0.01). Asthma Control Test scores were significantly improved following surgery (Figure 1).

Table 1. Demographic data

<table>
<thead>
<tr>
<th></th>
<th>Asthma (N=93)</th>
<th>Non-Asthma (N=372)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, Mean, years</td>
<td>6.08 ± 2.21 (3-14)</td>
<td>5.74 ± 2.12 (3-14)</td>
</tr>
<tr>
<td>Male</td>
<td>64.5% (60)</td>
<td>54.6% (203)</td>
</tr>
<tr>
<td>Female</td>
<td>35.5% (33)</td>
<td>45.4% (169)</td>
</tr>
<tr>
<td>OSA/ATH</td>
<td>97.8% (91)</td>
<td>90.1% (335)</td>
</tr>
<tr>
<td>Chronic tonsillitis</td>
<td>2.2% (2)</td>
<td>9.9% (37)</td>
</tr>
<tr>
<td>Post-op LOS, days</td>
<td>1.03 ± 0.18*</td>
<td>1.03 ± 0.13*</td>
</tr>
<tr>
<td>Post-op respiratory complications</td>
<td>1.1% (1)</td>
<td>0.2% (1)</td>
</tr>
</tbody>
</table>

*not significantly different

Anecdotally, many parents report that their child’s asthma status is improved after adenotonsillectomy. A review of the literature revealed that there is only one small study of 25 children with asthma who underwent adenotonsillectomy. They examined postoperative changes of respiratory symptoms, doses or frequency of medications. They found that 88% of children with asthma improved their asthmatic symptoms following adenotonsillectomy. Specifically, 60% of the patients were able to eliminate some of their medications and 28% were able to eliminate some of their medications. This study was limited in that it had a small number of patients and the follow-up period postoperatively was variable. A majority (97.8%) of our asthmatic patients underwent adenotonsillectomy for obstructive sleep apnea. Our study assessed asthma control both objectively and subjectively. We found that children with asthma had statistically significant improvement postoperatively in all measures of asthma control.

There are some limitations to our study. We did not include a control group consisting of children with asthma who did not undergo adenotonsillectomy. Thus, it is possible to argue that we may have in fact observed the natural history of the disease rather than measured the effect of our intervention. However, we specifically chose a cohort of children with asthma that were 3 years of age or older and did not have any history of prematurity as an underlying cause of their pulmonary disease. This eliminated most children who will likely outgrow their asthma as the transient infant wheezers. Children with asthma are at an increased risk for obstructive sleep apnea complications. In our study we were unable to analyze this because the number of patients was small as were the number of respiratory complications in each group. However, postoperative length of hospital stay was analyzed for the asthma and non-asthma groups and there was no statistically significant difference found (Table 1). Thus, indicating that the postoperative course in the two groups was similar.

There is growing body of literature examining the relationship of obstructive sleep apnea and asthma. Several epidemiological studies have identified an association between asthma and obstructive sleep apnea syndrome (OSAS) in both adults and children. The treatment of OSAS in adults has been shown in some prospective clinical studies to have a positive impact on asthma control. The exact mechanism for this link still remains unclear.

CONCLUSIONS

This study suggests that adenotonsillectomy, which provides improvement in the upper airway of children, may in turn lead to improvement of the lower airways of children, especially those with bronchial asthma.

REFERENCES