ENURESIS NOCTURNA IN ADENOTONSILLAR HYPERTROPHY

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SUMMARY

Primary care physicians have become increasingly reluctant to refer children for tonsillectomy, adenoidectomy during the past years while antimicrobial therapy for acute tonsilitis and acute otitis media has become more common. For this reason, more children retain tonsils and adenoids and prone to consequencies of airway compromise. One of the consequencies is Enuresis Nocturna. This study evalutes the relationship between enuresis nocturna and upper airway obstruction caused by adenotonsillar hypertrophy. Among 87 children who were operated on, 13 had enuresis nocturna. After 1 year follow up 8 patients were free of their complaints while 2 of them mentioned decrease in frequency of enuresis nocturna and 3 had no change in their complaints.

Key words: Enuresis nocturna, adenotonsillar hypertrohpy

INTRODUCTION

Over several decades, advances in antimicrobial therapy has led to a decrease in tonsillectomy and adenoidectomy indications. This decline has resulted from many factors including concern about the role played by pharyngolymphoid tissue in local and generalized immunity (1-4) As the rate of tonsillectomies and adenoidectomies began declining physicians became increasingly aware that some children had significant sequelae from hypertrophied tonsils and adenoids. Especially during sleep there is an increase in partial CO_2 pressure and a decrease in partial O_2 pressure because of hypoventilation, subsequently followed by acidosis. It causes pulmonary vasoconstriction and pulmonary hypertension (5).

Long lasting pulmonary hypertension leads to right ventricular hypertrophy and failure. In the course of disease somnolence, cardiomegaly with right axis deviation, congestive heart failure, accentuated pulmonary second sound, high PCO_2 and low PO_2 saturation are the most common presenting manifestations. Although not very common there are reported cases of adenotonsillar hypertrophy that lead to heart failure or respiratory arrest (6, 7). These children may also present with hypersomnolence, enuresis nocturna, hyponasal speech and failure to thrive. In this study, we tried to find out the incidence of enuresis nocturna among children who were selected for adenotonsillectomy. We have also followed these patients prospectively to document the post-op changes.

MATERIAL AND METHOD

The study group consisted of 87 children, 64 males and 23 females who were operated on, for adenotonsillar hypertrophy and/or chronic tonsillitis. The ages ranged between 3 and 13 years. Mean age; 7.6 years.

A through clinical examination was performed with particular emphasis on the status of the chest and heart, including an ECG and chest x-ray. Blood biochemistry, hemogram urinalysis were also investigated. Patients with an organic pathalogy that may cause enuresis were excluded from the study group. At the same time parental reports were obtained by questionnaire before and after surgery in which main complaints were classified. Patients with nocturnal enuresis were examined, at first, in the 6th and 12th months after operation in addition to routine post-op controls. These patients underwent tonsillectomy and/or adenoidectomy under general anesthesia. Modified Goode-T tubes were inserted to 51 of the patients, because of relapsing otitis media or otitis media with effusion. Complaints of our patients caused by upper airway obstruction were classified as follows:

Mouth breathing	79
Snoring	71
Snorting	62
Restless sleep	51
Enuresis Nocturna	13
Apnea	12

The results of questionnaire of the patients with enuresis nocturna are presented in Table I.

RESULTS

The results of questionnaire of the post-operative 1st, 6th and 12th months are documented in Table II.

Table II: Results of post-operative questionnaire

	1st month	6th months	12th months	%
A*	7	8	8	61.53
B**	3	2	2	15.40
C***	3	3	3	23.07
Total	13	13	13	100

* patients with complete relief of enuresis nocturna.
** patients with partial relief.
*** patients with no change in their complaints.

13 out of 87 patients who were operated on had enuresis nocturna. 8 of these patiens were free of their complaints postoperatively while 2of them mentioned partial relief. In the remaning 3 patients there was no change in enuresis nocturna but mouth breathing and snoring complaints relatively decreased.

DISCUSSION

Weider et al reported 35 children with Enuresis Nocturna (EN) who had upper airway obstruction (8). Christin Guillemaunt reported the rate of E.N. in children with upper airway obstruction to be 26 % (9). There are functional and structural factors which contribute to obstructive sleep-apnea (10-12) Hypotonicity of the pharyngeal musculature, abnormal central respiratory control and malformations like craniosinostosis are the major causes of upper airway obstruction (13-17). Nasal reflex dissappears in children with adenoid hyperplasia who can't perform nasal breathing (18). This is also accompanied by decreased chest motions (19). The regulatory function of the nose with valve mechanism is lost too. A change in pulmonary circulation and ventilation are observed subsequently (20). Insufficiency of ventilation will raise respiratory rate. As a result of this change gas exchange in alveolar field is decreased. Thus O_2 deficiency and hypoxia progresses. Hypoxia, increases respiratory rate and this will cause a vicious circle (21). As the inhaled air through the mouth is not completely humidified, alveolar O_2 absorbtion and CO_2 release will not be sufficient, and hypoxia will develop (22). Hypoventilation produces hypercapnia, hypoxia and acidosis, which causes pulmonary vasoconstriction and pulmonary hypertension. Persistent pulmonary hypertension leads to right heart hypertrophy and eventually right heart failure.It is thought that by rising the reflex threshold at the brain stem the developing hypercapnia, hypoxia and acidosis leads to enuresis nocturna. Enuresis is defined as involuntary urination occuring in a child at time when bladder control should have been obtained. Less that 10 % of children are dry by the age of 1. By the age of 5, 75 to 80 % of children are dry. After age 6, there is spontaneous cure rate of 15% a year so that, by age 10, only abouth 5 % of children continue to be enuretic. At age 18, it is estimated that 2 % of youth are enuretic. The only medications to have demonstrated a benefical effect are trcyclic antidepressants which produce a desirable effect on approximately 50 % of patients, and response usually occurs within one to two weeks (24). The placebo effects of the kind and firm interest of a physician probably are 30—50 % with no other assistance (25). Enuresis, however, is a non specific symptom found in a variety of disorders and despite the effectiveness of imipramine in the management of this symptom it is recommended that the problem underlying enuresis should be understood and dealth with (26). Although it is not possible to explain enuresis nocturna completely by upper airway obstruction, in the light of the similar result, of Weider et al. (8), we believe in benefits of searching the complaint in children with adenotonsillar hypertrophy. It is hopeful for the clinicians and patients' parents to identify the etiology of enuresis nocturna and offer a possibility for treatment although with a relatively small rate as 8-10 % (2).

Table I: Results of questionnaire of the patients with enuresis nocturna

	1	2	3	4	5	6	7	8	9	10	11	12	13
Sex	M	M	M	M	M	M	FM	FM	FM	FM	FM	M	M
Age	5	7	6	4	9	11	5	12	8	11	7	4	9
Enuresis	+	+	+	+	+	+	+	+	+	+	+	+	+
Snoring	+	+	+	+	+	+	+	+	+	+	+	+	+
Snorting	+	+	—	±	—	+	+	—	—	—	±	+	+
Mouth Breathing	+	+	+	+	+	+	+	+	+	+	+	+	+
Apnea	±	+	+	±	+	—	+	—	±	—	—	±	+
Failure to thrive	+	—	+	+	—	+	—	—	+	—	—	±	+
Daytime sleepiness	—	—	±	—	±	—	—	+	—	—	—	+	—
Morning cephalgia	+	—	±	+	—	—	+	—	—	+	—	+	+

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