ORIGINAL RESEARCH PAPER

ENT

A STUDY OF OXYGEN SATURATION LEVELS IN CHILDREN WITH CHRONIC ADENO TONSILLAR HYPERTROPHY

KEY WORDS: sinonasal outcome test, chronic rhinosinustis, steroid lavage.

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ABSTRACT

BACKGROUND: The adenoids & palatine tonsils are lymphoid structures located in the nasopharynx & oropharynx respectively. They are found at the entrance of the upper aero digestive tract. Most infections or inflammations of the palatine &nasopharyngeal tonsils in children are usually due to bacteria & viruses[1].

OBJECTIVES:

1) To analyse the oxygen saturation profiles of children with chronic adeno tonsillar hypertrophy.
2) To determine the role of enlarged adenoids and tonsils may be associated with ventilator impairment which is reversible after adeno tonsillectomy.
3) To examine the improvements or otherwise, any sleep disturbances and breathing difficulties after adeno tonsillectomy for chronic upper airway obstruction in children.

METHODS AND METHODOLOGY: Patients presenting to OPD, ENT department were examined for adenotonsillitis. A complete ENT examination was done to know about grade of tonsils and adenoids. 75 Patients who are diagnosed with adenotonsillitis were included in this study after taking written informed consent considering inclusion and exclusion criteria. SPO2 was done pre operatively and patients were advised for surgery. After surgery, test patients were checked for spo2 in post operative visits. In post operative visits, symptoms and clinical findings were compared clinically and radiologically. Pre and postoperative oximetric variables were analyzed using paired Student t-test or wilcoxon test. Depend on variables; correlation between variables was considered using pearson correlation test. The data were analyzed statistically with SPSS version.

RESULTS: T test post-op saturation values with pre-op value

Variable	obs	mean	std.deviation
POST-OP	75	92.7	4.19
PRE-OP	75	88.6	3.62
Diff	75	3.72	3.13

The above table showing paired student T test for pre & post operatively. The p value is 0.00 which is significant.

CONCLUSION: From this study, we concluded that children with obstructive adeno tonsillar enlargement had lower nocturnal oximetric profiles than children with no features of obstructive adenotonsillar hypertrophy

INTRODUCTION

The adenoids & palatine tonsils are lymphoid structures located in the nasopharynx & oropharynx respectively. They are found at the entrance of the upper aero digestive tract. Most infections or inflammations of the palatine &nasopharyngeal tonsils in children are usually due to bacteria & viruses[1].

Allergy causes antigenic stimulation of these lymphoid follicles which contribute to their enlargement. Repeated viral infections or inflammations may result in enlarment of these lymphoid follicles. Even when the infection resolves residual enlargement may persists leading to narrowing of nasopharyngeal & oropharyngeal tract[2].

Most infections/inflammations of the palatine and nasopharyngeal tonsils in children are usually due to viruses and bacteria[3].

Allergy causes antigenic stimulation of these lymphoid follicles which contribute to their enlargement[4,5].

OBJECTIVES

1-To evaluate the effect of steroid lavage in preventing the recurrence of nasosinus polyopsis after surgery.

2-To compare the recurrence of nasal polyps after surgery in patients with giving steroid lavage without giving steroid lavage

TYPE OF STUDY

Hospital based comparative study on the patients who underwent surgery for sinonasal polyps.

Study Population:

In-patients of ENT department, PESIMSR, Kuppam, Andhra Pradesh'

Inclusion criteria :

Children between 4-9 years with clinically confirmed Adeno tonsillar Enlargement.

Exclusion criteria :

1) Infants, children with comorbid illness.
2) Children with neurological, genetic & cranio facial abnormality.
3) Chronic medical illness related to lower respiratory tract infections, anaemia.
4) Children who have already undergone only adenoidectomy or tonsillectomy.

Method of data collection :

A total of 75 patients who presented with nasal obstruction, snoring, difficulty in breathing, difficulty in swallowing history was noted & physical examination done.

Diagnostic nasal endoscopy was done in patients who come with signs and symptoms of adenoid and tonsillar hypertrophy & they were clinically examined. In these patients, oxygen saturation levels was noted with pulse oximeter.

The parents or guardians received explanations about the study and signed the informed & written Consent Form. This prospective and descriptive study involved children, aged between 4 to 9 years with adeno tonsillar hypertrophy, of both sexes.

Patients were then subjected to various investigations like Hb%, BT, CT, urine examination, AEC, X-Ray of paranasal sinuses and Serological investigations like HIV and HBSAg. ECG was taken for patients as per hospital protocol. Fitness for surgery was taken from physician whenever necessary.

Written informed consent was taken from all the patients undergoing surgery.

The criteria for suspected OSAS in children were: recurrent snoring, breathing pauses mentioned by parents or guardians and restless sleep.

The selection followed the inclusion and exclusion criteria cited in the proforma. Oropharyngeal examination was performed and tonsillar enlargement was graded using the Brodsky criteria.

For this study we used a CONTEC (CM 50 D) fingertip pulse oximeter, which has a memory up to 72 hours patients was admitted 1 day before surgery oxygen saturation levels were monitored for about 6 hours. then after surgery pulse oximeter was connected and saturation levels were monitored for about 6 hours. postoperatively. patients was discharged after 1day if no complications were observed due to adenotonsillectomy.

The variables studied were: average low SpO2, basal spo2 pre & post operatively ,tonsillar grading & adenoids grading before procedure.

After inducing anesthesia patients were intubated orally and adenotonsillectomy was performed. After surgery the patients were closely monitored for any probable bleeding and complication for at least 24 h. Thereafter, they were evaluated in a four-week period.

Pre and postoperative oximetric variables were analyzed using paired Student t-test or wilcoxon test. Depend on variables; correlation between variables was considered using pearson correlation test. The data were analyzed statistically with SPSS version.

DATA ANALYSIS AND STATISTICAL METHOD:

STATA version14.0 is used for calculation. Paired't' test is applied for deriving values.

RESULTS AND DISCUSSION

There were 75 children aged 4-9 years in the study group. Thirty one of the participants in the study group were males (50.6%) while 29 were females (49.33 %).

gender distribution in the study group, 51.67 % males & 48.33 % females respectively.

Distribution of tonsillar enlargement in the study group

Grading of tonsillar hypertrophy	Frequency	Percentage
Grade 1	6	8.00
Grade 2	14	18.67
Grade 3	26	34.67
Grade 4	29	39.67
Total	75	100.00

DNE showing adenoid hypertrophy in the study group

AH grade	frequency	Percentage
Grade 1	15	20.00
Grade 2	25	33.33
Grade 3	28	37.33
Grade 4	7	9.33
Total	60	100.00

Distribution of common presenting symptoms (n =75)

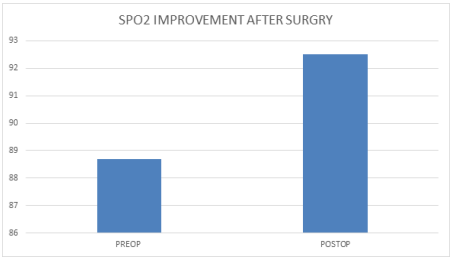
Symptoms	pre-op	post-op
Snoring	36 (48%)	8
Recurrent nasal discharge	25 (33.3%)	4
Mouth breathing	21 (28%)	6
Daily sleeplessness	19 (25%)	5
Apnoeic Attacks	15 (20%)	2

Saturation events in the study group

Saturation spo2	No. of patients pre-op	No. of patients post-op
100-96	4	17
95-91	16	20
90-86	28	17
85-81	12	6

This table explaining the saturation of events among the patients pre & post operatively

GRAPH SHOWING SPO2 DIFFERENCE PRE & POSTOP



This graph is showing saturation of study group pre & post operatively. There is a significant improvement in the saturation values after surgery.

CONCLUSION

From this study, we concluded that children with obstructive adeno tonsillar enlargement had lower nocturnal oximetric profiles than children with no features of obstructive adenotonsillar hypertrophy.

The present study, to our knowledge, is the prospective study to show objective improvements in sleep disturbances, breathing difficulties and physical suffering in children after adeno tonsillectomy. However, this study suffered from the limitations of relatively short follow-up duration as it is not known whether improvements are maintained in the long-term.

In spite of these limitations, the present study demonstrated resolution or remarkable improvement in snoring, mouth breathing, obstructive breathing during sleep, nasal discharge, and daytime hypersomnolence, after an AT in children with obstructive adenotonsillar hypertrophy regardless of whether the condition was mild or severe.

Obstructive adenotonsillar enlargement may decrease nocturnal oxygen saturation. Thus, in order to prevent long term complications, treatment of this disease should be considered early.

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