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To Assess the Relation of Adenotonsillar Hypertrophy with the Growth of Children (7 To 12 Years)-A Cross Sectional Study

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ABSTRACT

Background: Adenotonsillar hypertrophy (ATH) is a very frequently encountered disease in children under the age of 12 years. It may be associated with growth delay in children. Recurrent Adenotonsillitis leads to Adenotonsillar hypertrophy which causes nasal obstruction. It reduces food intake in child due to dysphagia, this further reduces body stamina where child avoids playing outdoor games, social activities etc. These above factors will be evaluated in this study. Therefore, recent studies have integrated disclosing the any relation of adenotonsillar hypertrophy with the growth of children. **Aim:** To determine whether there is any relation of adenotonsillar hypertrophy with the growth of children. **Objective:** To assess the relation of adenotonsillar hypertrophy with the growth of children. **Method:** 154 school going children were taken up for this study. out of 154, 64 children were diagnosed to be with adenotonsillar hypertrophy with the help of complete historyand clinical examination of children i.e. using throat Questionnaire. **Result:** There is no relation of Adenotonsillar hypertrophy with growth of children. **Conclusion:** This study concludes that Adenotonsillar hypertrophy are not associated with growth of children.

Key words: Adenotonsillar hypertrophy, Body Mass Index, School going children, Non Adenotonsillar hypertrophy cases.

INTRODUCTION

Adenoid tissue is present at birth, shows physiological enlargement up to the age of six years, and tends to atrophy at puberty and almost completely disappears by the age of 20 (1). As recurrent tonsillitis is a very frequently encountered disease in children under the age of 12 years. Recurrent adenotonsillitis lead to adenotonsillar hypertrophy in children (2, 3). Adenotonsillar hypertrophy causes nasal obstruction which can favour the frequent respiratory tract infections as well as causes obstructive sleep apnea with carbon di oxide retention in the body which affects the growth of the child. Adenotonsillar hypertrophy reduces food intake in child due to dysphagia, this further reduces body stamina where child avoids to play outdoor games, social activities etc (4). So, a cross sectional observation study is selected for population of 7 to 12 years of age group of both sexes to assess the relation of adenotonsillar hypertrophy with the growth of children.

AIMS AND OBJECTIVES

Aim

The Aim of this study was to investigate the delay growth in children with adenotonsillar hypertrophy in school going children.

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Objectives

1. To assess the relationship between Adenotonsillar hypertrophy and the weight of children of age group 7 to 12 years of both sexes.
2. To assess the relationship between Adenotonsillar hypertrophy tonsillar hypertrophy with the height of children of age group 7 to 12 years of both sexes.
3. To assess the relationship between Adenotonsillar hypertrophy and the body mass index (BMI) of children of age group 7 to 12 years of both sexes.

MATERIAL AND METHODOLOGY

- **Study setting**: S.B.I.O.A Public school, Mansarovar, Jaipur
- **Study duration:** 6 months
- **Study design**: Cross- sectional observational study.
- **Study Population:** 154
- **Sampling technique:** Convenient sampling.

- **Criteria for selection:**
  - **Inclusion Criteria:**
    - Age between 7 to 12 years of both sexes.
    - Children who show adenotonsillar hypertrophy through ENT examination are included.
  - **Exclusion Criteria:**
    - The children having acute tonsillitis, any chronic lung diseases as bronchial asthma, any associated chronic systemic illness (e.g., heart diseases, diabetes mellitus), neurological disease or obese children will be excluded.
    - The children taking any medication like tonics or supplements will also be excluded.

- **Tools used for Study:**
  - Pencil torch for Throat Examination
  - Rhinoscope for Rhinoscopic Examination
  - Otoscope for Otoscopic Examination
  - Standard Weighing Machine for measuring body weight
  - Stadiometer for height measurement

OBSERVATION AND RESULTS

An observational study was performed in which weight, height and BMI were assessed in established cases of adenotonsillar hypertrophy in school going children of 7 to 12 yrs age group and healthy school going children of 7 to 12 yrs age group. Results were analyzed comparing the mean values within groups (Table 1-3).

Table no. 1: Prevalence of A.T.H in children

Cases	Percentage
A.T.H.	56%
Non A.T.H	44%

Table no. 2: Prevalence of A.T.H according to age distribution

Age	No. of student with ATH
7	12
8	9
9	16
10	17
11	8
12	2

Table no. 3: Prevalence of A.T.H according to Sex

Sex	No. of student with ATH
Female	40
Male	24

Table no. 4: Presence of Adenoid facies in the cases of A.T.H

Adenoid Facies	No. of cases with ATH
Present	19
Absent	45

Table no. 5: Presence of Halitosis in the cases of A.T.H

Halitosis	No. of cases with ATH
Present	40
Absent	24

Table no. 6: Presence of Lymphadenopathy in cases of A.T.H

Lymphadenopathy	No. of cases with ATH
Present	23
Absent in ATH cases	41

Table no. 7: Within group comparison of Weight between N.A.T.H. and A.T.H. cases in male children

Age (in years)	Weight of ATH male children (in Kilograms average)	Weight of NATH Children average weight
7	26.5	22.8
8	23.5	25.2
9	31	28.2
10	32.8	31.5
11	40.3	32.6
12	44.5	37

Table no. 8: Within group comparison of Weight between A.T.H.and N.A.T.H cases in female children

Age (in years)	Weight of ATH female children (in Kilograms)	Weight of NATH female children (in Kilograms
7	23.6	21.4
8	23	22
9	32.2	31.5
10	34	33.5
11	38.3	37.5
12	0	38.5

Table no. 9: Within group comparison of height between A.T.H. and N.A.T.H. cases in male children

Age (in years)	Height of ATH male children (in meter)	Height of NATH male children (in meter
7	1.27	1.2
8	1.25	1.26
9	1.34	1.34
10	1.4	1.4
11	1.5	1.4
12	1.5	1.5

Table no. 10: Within group comparison of height between A.T.H.and N.A.T.H cases in female children

Age (in years)	Height of ATH female children (in meter)	Height of NATH female children (in meter)
7	1.2	1.2
8	1.3	1.3

9	1.4	1.3
10	1.4	1.4
11	1.47	1.4
12	-	1.4

Statistical Analysis

Table no. 11: Group Statistics

Group	N	Mean	Std. Deviation	Std. Error Mean
Weight without ATH	50	27.950	4.1322	0.5844
Weight with ATH	64	31.492	8.0126	1.0016

Table no. 12: Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Weight Equal variances assumed Equal	20.620	.000	-2.843	112	.005	-3.5422	1.2461	-6.0111	-1.0733
Variances not assumed			-3.055	98.515	.003	-3.5422	1.1596	-5.8432	-1.2412

Table no. 13: Group Statistics

Group	N	Mean	Std. Deviation	Std. Error Mean
Height without ATH	50	1.3134	.07545	.01067
Height with ATH	64	1.3623	.09476	.01185

Table no. 14: Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Height Equal variances	2.00	.16	-	112	.003	-.04894	.01639	-	-
Assumed Equal	4	0	2.986	111.95	.003	-.04894	.01594	0.8142	.01647
Variances not assumed			3.070					.08053	.01736

Table no. 15: Group Statistics

Group	N	Mean	Std. Deviation	Std. Error Mean
BMI without ATH	50	16.0960	.78972	.11168
BMI with ATH	64	16.8256	2.92070	.36509

Table no. 16: Independent Samples Test

	Levene's Test for Equality of Variances		T-test for Equality of Means						
	F	Sig.	t	df	Sig. (detailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
BM Equal variance assumed Equal	42.652	.000	-1.717	112	.089	-.72963	.42505	-1.57180	.11255
variances not assumed			-1.911	74.504	.060	-.72963	.38179	-1.49027	.03102

DISCUSSION

The present study entitled "To assess the impact of Adenotonsillar hypertrophy on the growth of children (7-12 yrs)-A Cross sectional study "was undertaken to assess the impact of Adenotonsillar hypertrophy on the growth of children.

The present study was limited to 154 school going children. Number of children screened out were 154, out of which Adenotonsillar hypertrophy was present in 64 children. In 40 children Adenotonsillar hypertrophy associated with other health disorder., heart diseases, diabetes mellitus found which were excluded in our study and 50 children were healthy with no adenotonsillar hypertrophy. The cases were diagnosed clinically as having adenotonsillar hypertrophy and were selected from S.B.I.O.A public school Mansarovar , Jaipur.

A Discussion on the interpretation derived from study has been given below:-

Age incidence: Out of 64 children, 12 children were observed in 7 years age group, 9 children were observed in 8 years age group.16 children were observed in 9years age group.17 children were observed in 10 years age group.8 children were observed in 11 years age group.2 children were observed in 12 years age group (Table 2).

Sex incidence: In our study Adenotonsillar hypertrophy were present in 24 male child and 40 female child out of 64 (Table 3).

Adenoid facies were present in 19 cases of Adenotonsillar hypertrophy out of 64 cases (Table 4).

Halitosis was present in 40 cases of Adenotonsillar hypertrophy out of 64 cases (Table 5).

Lymphadenopathy were present in 23 cases of Adenotonsillar hypertrophy out of 64 cases (Table 6).

Average weight of 7 years male child who suffered was 26 kg. Average height of 7 years male child who suffered was 1.27 m. Average weight of 7 years healthy male child is 22.8 kg and average height is 1.20m (Table 7).

Average weight of 7years Female child who suffered was 23 kg. Average height was 1.24m.Average weight of 7 yearshealthy Female child is 21.4 kg and average height is 1.20m (Table 8).

Average weight of 8 years male child who were suffered was 23.5 kg. Average height was 1.25m.Average weight of 8 years healthy male child is 25.2 kg and average height is1.26m (Table 7).

Average weight of 8years Female child who were suffered was 23 kg. Average height was 1.3m. Average weight of 8 years healthy Female child is 24.7 kg and average height is 1.3m (Table 8).

Average weight of 9 years male child who were suffered was 28.2kg. Average height was 1.34m. Average weight of 9 years healthy male child is 28.2kg and average height is 1.34m (Table 7).

Average weight of 9 years Female child who suffered was 32.2kg. Average height was 1.4m. Average weight of 9 years healthy Female child is 28.5kg and average height is 1.3m (Table 8).

Average weight of 10 years male child who were suffered was 32.8kg. Average height was 1.40m. Average weight of 10 years healthy male child is 31.5kg and average height is1.36m (Table 7).

Average weight of 10years Female child who were suffered was 34kg. Average height was 1.4m. Average weight of 10 years healthy Female child is 32.2 kg and average height is 1.4m (Table 8).

Average weight of 11years male child who were suffered was 40.3 kg. Average height was 1.50m. Average weight of 11years healthy male child is 32.6 kg and average height is 1.39m (Table 9).

Average weight of 11 years Female child who were suffered was 38.3 kg. Average height was 1.47m. Average weight of 11years healthy Female child is 37.5 kg and average height is 1.42m (Table 10).

Average weight of 12years male child who were suffered was 44.5kg, Average height was 1.48m (Table 9). Average weight of 12years healthy male child is 37.0 kg and average height is 1.47m (Table 9). Statistical Analysis was shown in table 11-16.

CONCLUSION

Adenotonsillar hypertrophy has insignificant effect on the height and weight of young children. However, it was observed that more female child was found affected from ATH than male child. This may be due to negligence towards female child's diet and care resulting in low immunity.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interests regarding the study or this article.

ABBREVIATIONS

ATH: Adenotonsillar Hypertrophy, NATH: Non Adenotonsillar Hypertrophy, BMI: Body Mass Index, Kg: Kilograms, m: Meter

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