



A COMPARATIVE STUDY OF PHYSICAL GROWTH PARAMETERS IN BETA THALASSEMIA CHILDREN WITH NORMAL SCHOOL-GOING CHILDREN BETWEEN THE AGE GROUP OF 5-15 YEARS

Paediatrics

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ABSTRACT

Introduction: Thalassaemia is one of the most common genetically transmitted diseases in the world and is associated with reduced synthesis of structurally normal haemoglobin. Anthropometric measurements are important especially to see the status of growth pattern. **Aim And Objectives:** To compare physical growth parameters in thalassaemia children with normal school-going children between the age group of 5-15 years. **Material And Methods:** The present comparative study was performed on 50 children in the 5-15 years age group in beta thalassaemia and normal school going children. All indoor as well as opd patients of beta thalassaemia were included in the study. Ethical approval and informed consent were obtained before the initiation of the study. Children were categorized based on the presence of thalassaemia (thalassaemia group, n=25) and normal school going children (control group, n=25). Both group participants were assessed for physical growth parameters such as height, weight, and body mass index (BMI). **Results:** Both groups were comparable in age and gender ($P>0.05$). Out of 50 sample size, 25 are beta thalassaemia major and 25 are normal school going children. Age of presentation is seen between 5-15 years of age. Percentage of children in thalassaemia and control group are compared using z test for proportion. It is observed that in weight and height below 3rd centile there is significant difference observed in thalassaemia and control group. **Conclusion:** Physical growth parameters such as height, weight, and BMI are reduced in children with beta thalassaemia. Height is more significantly affected compared to weight in the my study.

KEYWORDS

Thalassaemia, Children, School-going, Growth, Height, Weight.

INTRODUCTION

Thalassaemia is one of the most common genetically transmitted diseases in the world and is associated with reduced synthesis of structurally normal haemoglobin. It has a spectrum of clinical severity and is associated with ineffective erythropoiesis, bone marrow expansion, rapid destruction of erythrocytes and frequent blood transfusions. The beta thalassaemia are a group of inherited haematological disorders characterized by early onset of anemia resulting from reduced synthesis of one or more beta globin chains which can be caused by many different globin gene mutations. Growth failure in thalassaemia is one of the common complications. Many factors like iron overload, iron chelating agent toxicity, socioeconomic factors, nutritional deficiencies, hormonal deficiency will lead to growth failure. Regular blood transfusions, deferoxamine use, and other therapeutic facilities are important factors involved in the growth and development of these patients. Providing appropriate therapeutic methods and education for these patients and their families, and also the importance of regular measurement of their physical growth parameters as an index to evaluate the therapeutic effectiveness.

AIMS AND OBJECTIVES

AIM:

To compare physical growth parameters in thalassaemia children with normal school going children between the age group of 5-15 years

OBJECTIVES:

- To compare weight of thalassaemia children with school going children of same age & sex.
- To compare height of thalassaemia children with school going children of same age & sex
- To compare BMI of thalassaemia children with school going children of same age & sex group
- To study the parameter which is most affected.

MATERIALS AND METHODS

Study Place:

Department of Paediatrics at Great Eastern Medical School and Hospital.

Sample Size:

50 (25 beta thalassaemia children vs 25 school going children)

Study Design: A Comparative observational study

Study Population:

Inclusion Criteria

- All beta thalassaemia children of age group 5-15 years.
- Children of same age group and same sex group from school (Control group)

Exclusion Criteria

- Double heterozygous thalassaemia children.
- Thalassaemia children who were suffering from systemic illness like tuberculosis, chronic renal disease, chronic liver disease.
- ❖ Permission from school authorities was taken.
- ❖ Proper written and informed consent of parents and guardian was taken.
- ❖ Detailed history in the form of age, sex, diagnosis was taken.
- ❖ Physical Growth parameters like height, weight, BMI was measured and compared with school going children.
- ❖ Weight in kg was taken by electronic machine, height in cm was taken by stadiometer, BMI will be calculated by formula $\text{wt(kg)/ht}^2\text{(m)}$
- ❖ Weight for age, height for age and BMI was expressed in terms of percentiles relative to WHO 2007 child growth standards reference data.

RESULTS AND OBSERVATIONS

Table – 1 Distribution Of Gender And Group

	THALASSEMIA GROUP	CONTROL GROUP
MALE	14(56%)	15(60%)
FEMALE	11(44%)	10(40%)
TOTAL	25	25

Table – 2 Type Of Chelating Agents

DEFERASIROX	47(94%)
DEFERIPRONE	1(2%)
DEFERASIROX + DEFERIPRONE	1(2%)
DEFOXAMINE + deferasirox	1(2%)

Table – 3 Frequency Of Blood Transfusions

2-3 MONTHLY	2(4%)
MONTHLY	34(68%)
21 DAYS	10(20%)
15 DAYS	4(8%)

Table – 4 Weight For Age

Weight for age	Thalassaemia group	Control group	P value
<3rd percentile	8(32%)	0	0.00001
3rd – 50th percentile	17(68%)	20(80%)	0.16
>50th percentile	0	5(20%)	0.00168

Table – 5 Height For Age

Height for AGE	THALASSEMIA GROUP	CONTROL GROUP	P VALUE
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<3rd centile	12(48%)	0	0.00001
3rd – 50th percentile	13(52%)	22(88%)	0.00001
>50th centile	0	3(12%)	0.01

Table -6 BMI

BMI	THALASEMIA GROUP	CONTROL GROUP	P VALUE
Underweight	46	37	0.0164
Normal	4	11	0.016
Overweight	0	2	0.012

DISCUSSION

percentage of children in thalassemia group and control group are compared by using Z test for proportion. It is observed that, in weight for age below 3rd centile there is significant difference observed in thalassemia group and control group ($p < 0.00001$). In 3rd to 50th centile group, the difference in thalassemia and control group are not statistically significant. In >50th centile group, the difference between thalassemia and control group is statistically significant ($p < 0.00168$). In height below 3rd centile, there is significant difference observed in thalassemia and control group ($p < 0.00001$). In 3rd to 50th percentile group, the difference observed is statistically significant ($p < 0.00001$). In >50th centile group, the difference between thalassemia and control group is statistically significant ($p < 0.01$). The difference between thalassemia group and control group is statistically significant. In the present study, at 5% significance level weight, height and BMI these three parameters are significantly differed in both the groups. Height is more significantly affected compared to weight in the present study.

CONCLUSIONS

Physical growth parameters such as height, weight, and BMI are reduced in children with beta thalassemia. Height is more significantly affected compared to weight in the my study.

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