International Journal of Psychosocial Rehabilitation, Vol.24, Issue 09, 2020
ISSN: 1475-7192

Study of Physical Growth Conformation among Major Thalassemic Children at 5_15 Ages in Babylon Maternity and Children Hospital

[1] Nuhad Al doori, [2] Khatam M. Al-Musawi, [3] Abdul Mahdi A. Hassan

Abstract:

Thalassemia considered one of the most common human inborn illnesses in the world, which causes many problems for the affected children, families and health care system. The objective of the study: is to assess the physical growth configuration of thalassemic children among 5-15 years. Material and method: Descriptive (Non-Probability) design was carried out at child and maternal Babylon hospital-unit of blood diseases. The study was directed through a period extended from (1 May 2018 to end December 2018) on a convenience sample that consists of (150) thalassemic children who had scheduled visits to the center of Thalassemia. Data collection: through a questionnaire constructed for the purpose of the study & filled by the researcher, which consumes up to 25 minutes. It consists of 4 parts including the first three parts related to parental and child's demographical data while the last part related to such physical growth configuration & medical evaluations. Statistical analysis: through the application of electronic programs SPSS (statistical package for the social sciences) which resulted in the majority of thalassemic child's weight 39 (26%) with two groups equality (20-24) (25-29) consequently while their height was 57(38%) within (124-135) The most important result was BMI (body mass index) were ranged between (12-14) as 81(54%). The researchers recommend an educational program should be handled on parents concerned certain topics in caring for the thalassemic child particularly the nutrition which has a principal effect on their physical measurements.

Key words: *Physical Parameters, Thalassemia, Children.*

Introduction

Beta-thalassemia defined as main is a severe early-onset kind of Beta-Thalassemia character anemia needing systematic Red Blood Cells(RBCs) transfusions (Galanello, et al, 2010). It has a special growth style, which is relatively normal until the age of nine-ten years; after this age, a slowing down of growth velocity and a decreased or absent pubertal growth spurt are observed (Al-Salehe, et al., 2015. Child growth and development is a multidimensional process, which comprises not only physical growth, but also maturity of systems, as well as the improvements of capacities with their complexity, which inclined by a diversity of internal and external factors (Abdullah,2018) . Thalassemia also, is one of the most common human inborn illnesses in the world, which causes many problems for patients, families and health care system (Salman, 2014), particularly, when the child protests from such genetic disorder like thalassemia group of inherited hematological disorders, which have anemia as foremost complain (LOW,2005). the most common multifactorial in patients with thalassemia are Bone disorders, while, linked to, inadequate transfusion, iron-overload, other endocrine factors, and over-chelation. Bone disorders may be existing as arthropathies, skeletal deformities, fractures, growth retardation, or pain (Al-Mosawy, 2017, Al Skordis, 2006). Growth retardation in thalassemic patients can occur as early as the first or second year of life but these abnormalities are more apparent after 6 to 8 years. Whenever child diagnosed as early as possible with such prophylactic

[1] *Assistant Prof., Pediatric Nursing College of Nursing, University of Babylon, Iraq nuhad64@yahoo.com*
[2] *Assistant Prof., Pediatric Nursing Department, College of Nursing, University of Baghdad, Iraq*
[3] *Assistant Prof., Child and Mental Health Nursing, College of Nursing, University of Babylon. Email: abd_mahdi2003@yahoo.com.*

management could be lessening the exposure to alteration in their measurement. Regular blood transfusion followed by iron chelation therapy is just a supportive treatment for those patients, which was associated with serious complications (Geffner, 2009). Patients suffering from severe thalassemia need into medical treatment. Regular blood transfusion joints with well-monitored chelating agents (chelating therapy) as a standard type of treatment (Yaish,2015), more-over (prolong their life. Nutritional deficiency is common in thalassemia, due to hemolytic anemia, increased nutritional needed, and morbidities like diabetes iron overload, and chelator. Recommendations for dietary supplementation should be made as indicated by complications of the illness nutritional history, and, in kids, growth condition. Typically, multivitamin supplementation without iron is suggested to be taken, as well as encourage the child to engage in play, sports, and physical activities regularly (Children hospital &Research Center oakland ,2012). Thalassemic patients and their families should be educated, treated d supported in age- suitable-suitable hat they can take an active role in optimizing their health and quality of life. Patients and their families should work together with importance important in a multidisciplinary team to optimize their care. Accurate and effective communication inside a family, between health professionals, between the patient and the health care team should be maintained to ensure the successful management of this life-long condition . (Sayani, 2014).

The researcher found the importance of the study, as long as thalassemic child complained from wide-ranging changes in their features recognizably growth starting which we present in the current study as major problem among those type of inherited disorder. The study aims to assess the physical growth pattern of thalassemic children among 5-15 years, as well as, to identify relationship between those measurements with certain demographic data.

II. Methodology

1-Meterial and method: Descriptive (Non Probability) design was conducted on (assessment of anthropometric measurement of thalassemic children) which was carried out at child and maternal Babylon hospital-unit of blood disease, thalassemic patients. The study was directed through period extended from (1 May 2018 to end December 2018) on (150) thalassemic patient who have scheduled visit to center of thalassemia.

2-Data collected through a questionnaire constructed for the purpose of the study & filled by the researchers which consumed up to 15 minutes. It consists of 4 parts including: the first three parts related to parental and child demographical data while the last part concerned the anthropometric & medical evaluations of the effected child.

3-Statistical analysis: data analyzed electronically through using of (SPSS) social package statistical science in order to use descriptive an inferential statistical according to the aim of the study.

4- Ethical consideration: Data collection is done by the investigator, who preserved the privacy and anonymity of the data. The form for data collection was applied without mentioning the name of kids or their addresses and verbal consent were obtained from the participant in the study.

Results

Table 1 : demographic characteristics of child :

Items	Frequency	Percentage %
Age of child in years		
5 – 7	36	**24.0**
8 – 10	**54**	**36.0**
11 – 3	48	**32.0**
14 – 15	12	**8.0**
Total	150	**100.0**
Gender of child		
Male	**81**	**54.0**
Female	69	**46.0**
Total	150	**100.0**
Child order		
1 – 2	93	**62.0**
3 – 4	21	**14.0**
5 – 6	27	**18.0**
7 – 8	6	**4.0**
9 – 10	3	**2.0**
Total	150	**100.0**
Thalassemic child order		
1 – 2	**138**	**92.0**
3 – 4	12	**8.0**
Total	150	**100.0**
Number of visit in month		
1	**99**	**66.0**
2	42	**28.0**
3	9	**6.0**
Total	150	**100.0**

In regards of age of the sample, table (1) shows high percent number of children 54 (36 %) who aged (8 – 10) with male majority which represent as 81 (54 %) . Most of thalassemic child 138 (92 %) ranged between (first – second) order, as well as 99(66 %)of the thalassemic children included in the study have once visit in month.

.

Table 2 : demographic characteristics of mother :-

Items	Frequency	Percentage %
Age of mother		
20 – 29	45	**30.0**
30 – 39	**63**	**42.0**
40 – 49	36	**24.0**
50 – 59	6	**4.0**
Total	150	**100.0**
Education level		
Illiterale	21	**14.0**
Literale	**129**	**86.0**
Total	150	**100.0**
Occupation		
Private work	**141**	**94.0**
Employ	9	**6.0**
Total	150	**100.0**
Source of knowledge		
Educational resources	**108**	**72.0**
Friends and relatives	42	**28.0**

Total	150	**100.0**

Table (2) show highest number of mothers 63 (42 %)between age(30-39)in years, and majority of them 129 (86%) were literate, most o of them occupied at private settings which present as 141 (94%) of the total population included in the present study. In addition to majority of thalassemic mothers 108 (72%) had knowledge from educational resources .

Table 3 : demographic characteristics of father :-

Items	Frequency	Percentage %
Age of father		
26 – 33	36	**24.0**
34 – 41	45	**30.0**
42 – 49	**54**	**36.0**
50 – 57	15	**10.0**
Total	150	**100.0**
Education level		
Illiterates	18	**12.0**
Literals	**132**	**88.0**
Total	150	**100.0**
Occupation		
Private work	**84**	**56.0**
Employ	66	**44.0**
Total	150	**100.0**
Source of knowledge		
Educational resources	**108**	**72.0**
Friends and relatives	33	**22.0**
Mass media	9	**6.0**

Total	150	**100.0**

Table (3) indicate that most fathers age of thalassemic child 18(36%) between (42-49) in years, with majority of them 132 (88%) were literate, And less than half of them were employed 66(44%) , as well as had knowledge from educational resources 108 (72%).

Table 4 : Anthropometric measurements of child :

Items	Frequency	Percentage %
Weight		
15 – 19	8	**16.0**
20 – 24	39	**26.0**
25 – 29	39	**26.0**
30 – 34	10	**20.0**
35 – 39	4	**8.0**
40 – 44	1	**2.0**
45 – 49	1	**2.0**
Total	150	**100.0**
Height		
90 – 111	21	**14.0**
112 – 123	33	**22.0**
124 – 135	57	**38.0**
136 – 147	30	**20.0**
148 – 159	6	**4.0**
160 – 171	3	**2.0**
Total	150	**100.0**
Middle arm circumference		
14 – 15	12	**8.0**
16 – 17	66	**44.0**
18 – 19	60	**40.0**
20 – 21	9	**6.0**
22 – 23	3	**2.0**
Total	150	**100.0**
Body mass index (BMI)		
9 – 11	6	**4.0**
12 – 14	81	**54,0**
15 – 17	**27**	**18,0**
18 – 20	33	**22.0**
21 – 23	3	**2.0**
Total	150	**100.0**

Age of diagnosis in months		
2 – 11	**63**	**42.0**
12 – 21	51	**34.0**
22 – 31	15	**10.0**
32 – 41	6	**4.0**
42 – 51	6	**4.0**
52 – 61	9	**6.0**
Total	150	**100.0**
Other chronic disease		
No	141	**94.0**
Yes	9	**6.0**
Total	150	**100.0**
Exposed to splenectomy		
No	141	**94.0**
Yes	9	**6.0**
Total	150	**100.0**
Level of Hb before transfusion		
4 – 5	15	**10.0**
6 – 7	51	**34.0**
8 – 9	84	**56.0**
Total	150	**100.0**

The most significant result, which indicate our main objective were BMI characteristics of the respondents included in the present study, Table (4) present a majority of them (12-14) with (54%) as high level of BMI, that the rational were the sample diagnosed as early age group through infancy at(2-11) month who represented as(42%) of the sample involved in the current study .

IV: **Discussion**

Internationally, thalassemia is a common genetic disorder, affecting as many as 15 million people; their Families require the chance to discuss their feelings worried transmitting a potentially deadly chronic disease to their children (Karadage, et al. , 2015).

Growth retardation happens invariably in homozygous b-thalassemia. important size retardation is observed in stature, weight, height , acromial (shoulder), and bicristal (iliac crest) breadths (Soliman,2009). Such study which titled (Nutritional Status in Patient with Thalassemia Intermedia) and conducted on 30 patients (12 girls and 18 boys), The study included a number of children whose ages ranged between five-fifteen years after being diagnosed with moderate thalassemia and hemoglobin was between 7-9 g / dl and none of them received iron cell therapy or blood transfusions or within three months and they had no history of infection.

while the current study included children Their ages range from 8-10 years, the majority of whom are male, accounting for 54% of the sample, and did not receive treatment in the same way. Most important result posted in table (2) that the education of thalassemic mothers which expressed as 129(86%) are literate and occupied in private work 141(94%).This outcome indicate the well caring mothers should be well aware and follow up to their thalassemic children with certain exclusive dietaries.

The results as shown in table (4) in regard to the weights of thalassemic children, that majority of them 39(26) between (20-24) (25-29) , with BMI were (12-14) among 81(54%) which was not considered as deviated severely

from normal. This can be supported by (Thongkijpreecha,etal., 2011) The poor physical growth of children with moderate thalassemia after conducting human measurements for them reflects the urgent need for foodstuffs and the shortage of calories and main nutrients from the requirements of training and development for them. Therefore, we recommend setting criteria to improve growth for children above through improving nutritional care for them. While other study (Fahhim, 2016) which resulted that kids with beta-thalassemia major have late growth and metabolic anomalies that signify the significance of therapeutic interventions. The existence of these anomalies may be due to and poor nutritional support iron overload. In addition to another study posted by (Karadage, et al., 2015) that the bone age is frequently delayed after the age of six-seven years, whereas, growth retardation becomes markedly severe with the failure of the pubertal growth spurt. With the introduction of rising transfusion regimes and efficient iron chelation pre-pubertal linear growth has been improved markedly .

In relation to age of diagnosis within the current research, the result was majority 63(42) among (2-11) months, this were supported by (Sayani, 2013that the diagnosis of a kid with a thalassemia disturbance should be done as early as possible after childbirth and should involve hematological and genotypic analysis. Casale , (2013) Stated that splenectomy determines immediate drop in blood consumption and iron intake but slow downtrend of ferritin; direct measurements of iron overload, such as magnetic resonance studies, are needed to better understand the effect of splenectomy on iron balance parameters. Tailoring chelation therapy and eventually, its intensification seems more efficient measures to manage iron accumulation and lower iron level to safety threshold, in addition to (Hashemi, 2011) concluded that High serum ferritin levels during puberty reason delay of growth retardation and development in transfusion-dependent thalassemia patients .

Thalassemic The thalassemic exposed to potential chronic complications from frequent blood transfusions related to iron overload in body tissues. To minimize the development these chronic conditions, the oral iron chelation deferoxamine (Desferal), a parenteral iron-chelating agent, and more tolerable by patients and families (Hockenberry and Wilson's, 2015) however in our existing study as shown in table (4) that 141 (94%) of samples not have another chronic disease with the same number of samples 141 (94%) are not exposed to splenectomy, while there are 84 (56%) of samples was the ratio of Hb. in which (8-9).

Family education begins with an explanation of the disease and its Consequences specifically maintaining the Hgb level above 9.5 g/dl, an aim that may require transfusions as often as every 3 to 5 weeks in order to improve psychological well-being as well as promote their abilities to participate in normal activities (Pilliterri, 2010).

V: Conclusions

The study concluded:
1. Most of the sample included was an estimating equal number.
2. The parent of the sample were educated and had well knowledge from their educational resource.
3. Majority of the children were within upper level of BMI related to well caring conditions.

VI : Recommendations

Educational program should be handled on parents concerned certain topics in caring of thalassemic child. Together parents should be given verbal and written information about the diagnosis and management, the precaution of thalassemia among children between five- fifteen years, and allow asking a question. The key contact specialist nurse should meet and exchange contact information with the family.

VII: References

1. Al-Salehe Q. A., Al-Awady M. Sh., Abbass Sh., Kh.: Growth Retardation in β-Thalassemia Major, The Iraqi Postgraduate Medical Journal, Vol. 14,No.2, 2015, 268-273.
2. Abdullah, M.M.: Prevalence of thalassemia among patients attending to Ibn-Al-Baldi hospital in Baghdad city, Journal of University of Babylon for Pure and Applied Sciences,Vol.(26), No.(7) 2018, 76-84.
3. Salman.A.N., **Evaluation of Some Humoral Immune System Parameters in Beta Thalassemia Major Patients at Waist Province** / Iraq, College of Education for Pure Sciences, Vol.9no.1. mar.2014, PP.2 .
4. Low.L.C, Growth Of Children With B_Thalassemia Major Department Of Pediatric And Adolescent Medicine, **India journal of pediatric**, vol72-fepruary,2005, pp.159.
5. Skordis N. The growing child with Thalassemia. J Pediatr Endocrinol Metab 2006;19:467-69 .
6. AL-Mosawy W.F.: Effect of transfusion interval rate on clinical manifestations of patients with beta-thalassemia major and their correlation with some biochemical, Kerbala journal of pharmaceutical sciences. No. (13) 2017, 249-257 .
7. Geffner. E, Use of Recombinant Human Growth Hormone in Children with Thalassemia, Horm Research Jan (21)2009, p.46-50 .
8. Yaish.H.M, Pediatric Thalassemia, Medscape, updated oct11,2015.
9. Children's Hospital & Research Center Oakland (2012), Standards of Care Guidelines for Thalassemia, pp.17 .
10. Sayani F., Guidelines for the Clinical Care of Patients with Thalassemia in Canada Anemia Institute for Research & Education, 2014, 218-243 .

11. http://study.com/acodemy/lesson/what_is_anthropometric_measurement_took_purpose_methods.html

12. http://web2.uconn.edu/assessment/what/index.html
13. https://en.m.wikipedia.org/wiki/child
14. Soliman,.A.T, Growth And Factors Affecting It In Thalassemia Major , Informa health care, 1–2 May, 2009, pp.11.

15. Karadag, C. etal: Impact of Spleen Size on Outcomes in Laparoscopic Splenectomy in Children, Gastroenterology Research and Practice, Volume 2015, 1-4.

16. Thongkijpreecha.PH.et al, Nutritional Status in Patients with Thalassemia Intermedia, Journal of Hematology and Transfusion Medicine, Vol. 21 No. 3 July-September 2011, pp.2 .
17. Fahhim, F.M, Growth Parameters and Vitamin D status in Children with Thalassemia Major in Upper Egypt, International Journal of Hematology- Oncology and Stem Cell Research, 13 November 2016, pp.2 .
18. Casale.M, Effect of splenectomy on iron balance in patients with β-thalassemia major: a long-term follow-up, European Journal of Hematology, 7 April 2013, pp.69 .
19. Hashemi A & et al, Te Study of Growth in Thalassemic Patients and its Correlation with Serum Ferritin Level, Iranian Journal of Pediatric Hematology Oncology, Vol 1. No 4, 22 November 2011, pp.5 .
20. Hockenberry,M.J., Wilson, D.(2015). Wong's Nursing care of infant and children 10th Edition. Mosby, United States of America, St. Louis, 881-882 .

21. Pillitteri, Adele; Maternal and child health nursing: care of the childbearing and childrearing family, Lippincott Williams & Wilkins, Philadelphia, 2010, pp. 1310-1