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شبكة المعلومات الجامعية
التوثيق الالكتروني والميكروفيلم



GROWTH STUDY OF NORMAL AND THALASSEMIC CHILDREN IN ASSIUT PROVINCE

*Thesis Submitted For Partial Fulfillment
For The Doctorate Degree In Anatomy*

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﴿ الآية ٢٨٦ سورة البقرة ﴾

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TO THE MEMORY OF MY GREAT MOTHER

TO MY FATHER

TO MY HUSBAND SAMY

AND

TO MY DAUGHTERS

YARA, YOMNA & YASMIN

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INTRODUCTION

AND

AIM OF THE WORK

INTRODUCTION AND AIM OF THE WORK

Assessment of growth of children has become of great applicability in clinical pediatrics and public health. Assessment of growth is an essential part of the pediatric physical examination. Normal growth does not rule out the presence of disease, but abnormal growth is frequently associated with diseases or malnutrition. Assessment of growth not only helps in detection and diagnosis of disorders in childhood but also serves as a useful guide for treatment and follow up of diseased conditions. In the field of growth and development, the term "normal" is mostly used in the sense of "commonly occurring" rather than in the sense of an ideal target to be achieved. Assessment of growth of a population is related to a certain standardizing group and conclusions made about such assessment are valuable with respect to this group. The standardizing group should be representative of the population to which the children who are to be assessed belong and should be homogenous in ethnic, racial, social, geographic and other characteristics. In other words, and in order to assess growth of diseased children it is desirable whenever possible to compare their parameters with standardized parameters of normal children related to the same population.

Thalassemia is a common hereditary and familial disease in Egypt. The milder forms of thalassemia are among the most frequent genetic defects in humans, whereas the more severe forms, although less frequent, cause diseases with significant morbidity and

mortality. Thalassemia is due to mutations that affect the synthesis of adult hemoglobin. Adult hemoglobin is composed of two polypeptides; alpha and beta globins. In alpha thalassemia there is decreased or total lack of α globin synthesis, where in β thalassemia, there is deficient or absent synthesis of β globin. Beta chain production is activated as early as the 8th week of gestation with the switch to adult hemoglobin completed between 3-4 month of age (thus thalassemia major will not present until after 3-4 month of life). Over the past 20 years, it has become evident that high incidence β thalassemia occurs in population of Mediterranean and African origin. The α thalassemia, on the other hand, exists through populations from the Chinese subcontinent, Malaysia, Indochina and Africa.

Thalassemia major is a chronic disabling disease, mostly necessitating blood or blood components transfusion with half of the life of the patients spent in hospitals and the other half not enjoying life.

Growth retardation has been considered to be an almost constant feature of β thalassemia.

There is a considerable number of thalassemic children recorded in Upper Egypt. Those children receive repeated blood transfusions. In spite of the blood transfusions, growth of these children appears not to be normal. Growth studies of thalassemic children in Upper Egypt is lacking.

The present study aims at:

1. Assessing the growth pattern of thalassemic children in comparison with normal children who live in Assiut province. This may show how growth of thalassemic children deviates from normal, beside focusing on growth aspects related to body measurements and bone age. Body fat measures are newly introduced to the growth assessment of thalassemic children in the present study.
2. The study may declare why in spite of receiving repeated blood transfusions, yet growth of thalassemic children appear not to be normal.

REVIEW

OF

LITERATURE

REVIEW OF LITERATURE

Concept of Growth

All health personnel having responsibility for the care of children should be sufficiently familiar with the normal patterns and milestones of growth so that they can recognize overt deviations from the normal ranges as early as possible, in order for underlying disorders to be identified and given appropriate attention.

The term growth and development refers to the process by which the fertilized ovum eventually attains adult status. Growth principally implies changes in size of the body as a whole or of its separate parts. Development embraces other aspects of differentiation of form, but principally involves changes of function, including those largely shaped by interaction with the structural, emotional, or social environment (Behrman and Vaughan, 1987). Growth is a very regular and dynamic process. It is also very regulated, but it is not necessarily a smooth, continuous process. For example, weight and height increase relatively rapidly in the early months of life and just before puberty, but at a very constant rate in between. Increasing size is the most obvious developmental change in infancy and childhood. However, size increase is only one of many components of postnatal growth and development, all of which must occur in highly coordinated sequence to assure structural and functional integrity as the child matures.

Growth of the body as a whole is the net result of increasing cell size and number in various tissues. Differences in growth rate

for various tissues give rise to characteristic age and sex related differences in body composition.

Normal variations of growth exist between people belonging to different social and ethnic groups. This is due to variation in the speed of development of different structures and functions which underlie many individual differences in bodily structure. Examples of this heterochrony (individual variations) are the longer arms and legs relative to the trunk in men as opposed to women, or in blacks as compared with whites. These facts should be understood before adequate appreciation of disease and abnormality could be accepted.

Assessment of growth is a basic part of the pediatric physical examination which might help in diagnosis of childhood disorders as well as serve a useful guide for treatment of certain diseases.

Human biologists apply the term "maturity" to express the extent to which an individual or a group of individuals proceed towards adulthood. Therefore, maturation is a particular type of development that proceeds to the same end point in all individuals. Because children vary so much in the age at which they reach adolescence, some designation other than chronological age is needed. It is useful to have measures applicable throughout the whole period of growth, for what has been called developmental age or "physiological age" (Abdel Malek, 1982).

The degree to which, and the process through which, a person achieves biologic potential are the consequences of many interrelated factors. Genetic factors are sometimes thought of as establishing final limits to biologic potential, but these are intimately interwoven with the environment. Physical trauma may affect