STUDY ON THE EFFECT OF RICKETS ON SKELETAL MUSCLE

Thesis

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ABBREVIATIONS

25-OHD	:	25-hydroxy vitamin D
1,25 $(OH)_2D$	:	1,25-dihydroxy vitamin D
24,25 $(OH)_2D$	:	24,25-dihyroxy vitamin D
25,26 $(OH)_2D$	:	25,26-dihydroxy vitamin D
Ca	:	Calcium
P	:	Phosphorus
AP	:	Alkaline phosphatase
CPK	:	Creatine phosphokinase
LDH	:	Lactate dehydrogenase
Ca BP	:	Calcium binding protein
DBP	:	Vitamin D binding protein
PTH	:	Parathormone
ECF	:	Extracellular fluid
SD	:	Standard deviation
UV	:	Ultraviolet
Wt/age	:	Weight per age
L/age	:	Length per age
Wt/L^2	:	Weight per $length^2$
HC/age	:	Head circumference per age
CC/age	:	Chest circumference per age
H/C	:	Head per chest ratio

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INTRODUCTION

I. INTRODUCTION

Rickets is now recognized as a systemic disease affecting not only bones but also other systems of the body particularly the muscles.

Vitamin D was found to have a specific function in muscle which might, perhaps, be mediated by 25-oHD. (Pointon et al, 1979). Vitamin D depletion has been found to produce a defect in skeletal muscle contraction and relaxation that are dependent on changes in blood mineral composition (Boland, 1985).

Paucity of reports that deal with muscle status of rachitic children encouraged us to study the relationship between vitamin D deficiency and muscle status of the rachitic children. This was accomplished by studying the electromyographic pattern of the rachitic children, serum levels of the enzymes that can be released in excess from injured muscle and serum levels of 25-oHD and 1,25 $(oH)_2D$. Besides, serum levels of alkaline phosphatase, phosphorus and calcium have been measured.

It is well known that vitamin D plays a major role in regulating calcium and phosphorus homeostasis. This function of vitamin D is mediated through its hormonal form $1,25(oH)_2D$ which is 10 times more active than vitamin D itself and exerts its effect on many organs and tissues of the body (Deluca and Schnoes, 1983).

Studies concerning the levels of $1,25(oH)_2D$ in nutritional rickets dealt with a limited number of cases. Another aim of this work is to study the serum levels of $1,25(oH)_2D$ and 25-oHD which are the two most active metabolites of vitamin D in some of the Egyptian rachitic children at different stages of rickets and compare them with changes in serum levels of muscle enzymes, if any.

As rickets is still a prevalent disease in Egypt (Awwaad et al, 1975 & Abd-El-Fattah, and El-Rafie 1977) as well as in tropical and North African countries (Srikantia, 1984), where enough sunshine can be received, we have studied the socioeconomic and environmental conditions of the rachitic children which may participate in the occurrence of rickets in sunny Egypt.

REVIEW

OF

LITERATURE