LIABILITY TO INFECTION IN PROTEIN ENERGY MALNUTRITION

THESIS

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BY

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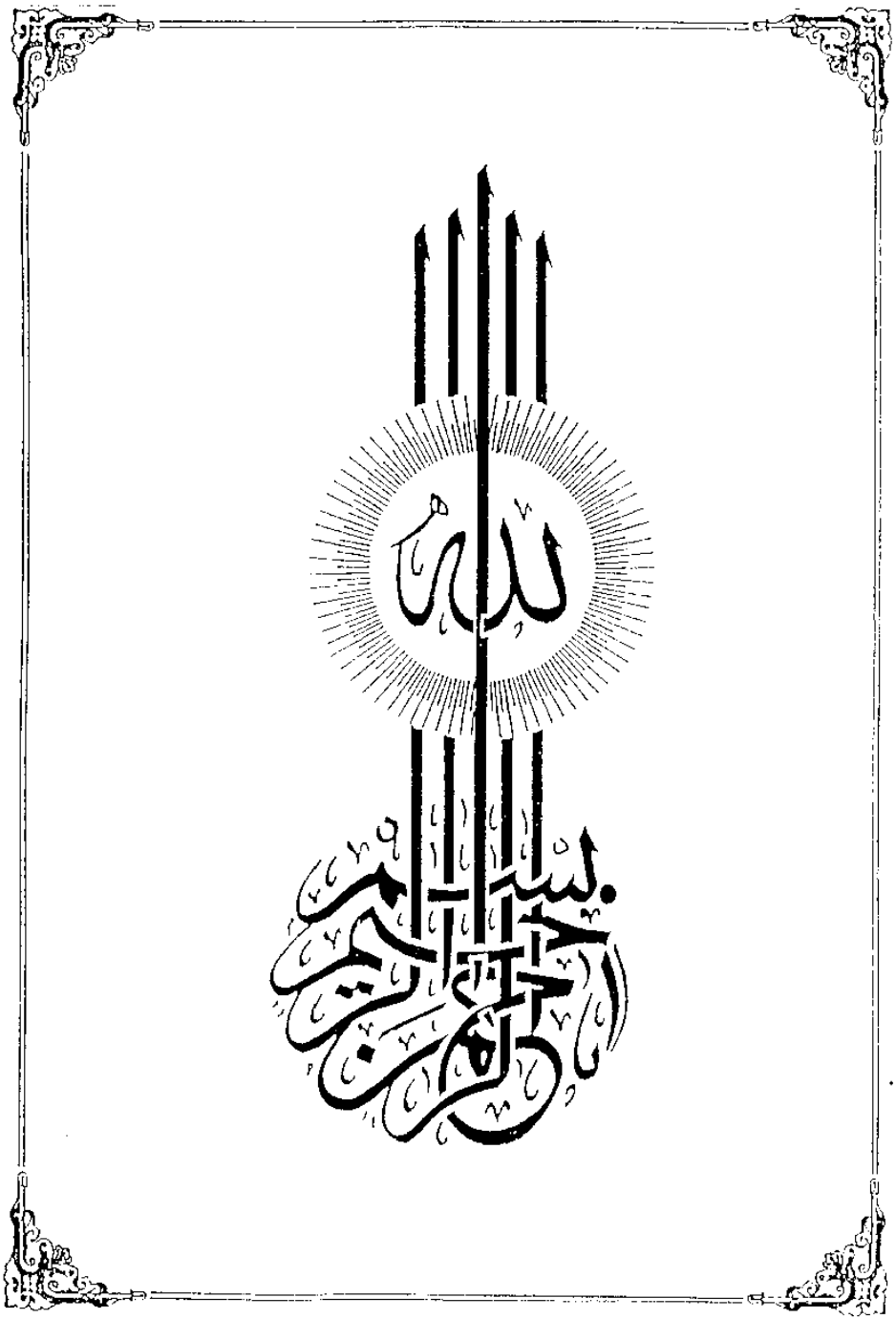

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INTRODUCTION

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Protein energy malnutrition is the most wide spread of the major health problems among children in developing countries including Egypt .

In these countries the mortality rate among preschool children which is an indirect evidence of the nutritional status is about forty times more than that of developed countries (Abbassy et al., 1972) . This marked contrast is due to the difference in the nutritional status among preschool children in developing and developed countries .

There is a considerable evidence both in the published literature and in common clinical experience to indicate that infections occur frequently and have more serious consequences in children suffering from protein energy malnutrition.

The increased susceptibility to infection in the malnourished child is generally attributable to the deleterious effects of malnutrition on the immune mechanisms that serve to prevent or limit bacterial, viral and fungal invasion in vivo (Sakr et al., 1978).

Jelliffe (1966) considers that the "Big three " among the killing diseases in childhood in developing countries are diarrheas, pneumonia and protein energy malnutrition of early

childhood and that these diseases accounted for twenty , eighteen and fourteen percent respectively of admission to the New Mulago Hospital in 1963 .

AIM OF THE WORK

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From the previous introduction it is obvious that infants and children with protein energy malnutrition are commonly met with in pediatric practice. So the aim of the present work is to study the causes of secondary infection in protein energy malnutrition which may help in the management of malnourished infants and children .

REVIEW OF LITERATURE

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Prevalence of Protein Energy Malnutrition in Egypt

Estimation of the prevalence of protein energy malnutrition in Egypt had been carried out in different field areas (Shukry and Kamel , 1974)

According to Abd El-Hamid et al.,(1978) the prevalence of protein energy malnutrition was 26.45% which is markedly less than that reported by other investigators in rural areas. This situation may be related to the relatively better health services in the locality (Sendion Village, Qualyubeua Governorate where the study was done. Also the same authors showed that the prevalence of protein energy malnutrition was higher in females than males.

Other authors reported significant high prevalence of protein energy malnutrition among female children and this was explained on the preferential situation of boys over girls particularly in rural areas (Dean ,1961) . On the other hand El-Behairy et al.,(1976) found that females were not more affected .

The prevalence of protein energy malnutrition was lowest during the first six months of life as showed by Abd EL-Hamid et al., (1978) and this was related to the fact that breast

feeding is the rule in this age period and is considered satisfactory from the nutritional point of view .

Furthermore , there is no risk of contaminated bottle feeding with repeated attacks of diarrhea which leads to malnutrition.

On the other hand in the second six months of life the prevalence of protein energy malnutrition increased as breast milk was insufficient to meet all dietary requirements and the supplements given were mostly watery fluids of negligible nutritional value .

The highest prevalence of protein energy malnutrition was observed in the second year of life (Abd EL-Hamid et al., 1978). This is due to the fact that children were mainly dependent on breast milk in the first year of life, but in the second year of life, breast milk becomes insufficient together with improper supplementation and after weaning the usual diet is cereal grains, starchy roots and over diluted milk. So in all these cases there is insufficient intake of calories and proteins of high biological value . The same authors showed that by the end of the fourth year the prevalence of protein energy malnutrition had markedly dropped because most children are allowed to eat adult diet .

EL-Behairy et al.,(1976) showed no relation between the prevalence of protein energy malnutrition and birth order

and this was confirmed later on by Abd EL-Hamid et al.,(1978).

The synergistic relationship between infection and malnutrition had been well documented. Scrimshaw et al.,(1968) reported that infections precipitate nutritional diseases in the malnourished while malnutrition predisposes to infection and worsens the consequences of infection .

The role of infection as a precipitating and participatin factor in the pathogenesis of PEM is related to the metabolic responses to these infections where there will be depressed dietary intake due to anorexia and nausea, increased tissue catabolism and loss of body nutrients through secretions or excretions and this is together with other metabolic and hormonal responses to infection (Beisel ,1980).

Protein Energy Malnutrition (PEM)

Definition of PEM :

PEM is a socionedical problem resulting from two main factors , a diet that is quantitatively and qualitatively inadequate and superimposed stress usually of infecticus origin (Scrimshaw and Moises ,1965) .

Classification of PEM :

I. Classification depending mainly on weight :-

* Gomez classification : -

Gomez classified PEM into three grades depending on weight / age as percentage of expected as follows .

% expected weight/age	PEM level
More than 90 %	Normal
- 75%	1st degree
- 60%	2nd degree
Less than 60%	3rd degree

* Jelliffe classification : -

Jelliffe then used the same criterion in dividing PEM into four levels .