Protein Energy Malnutrition

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Abstract : Protein Energy Malnutrition (PEM) is generally a nutritional problem that results from varying proportions of protein and calorie deficiency ininfants and young children of developing countries. The major risk factors that can predisposed a child to having PEM include poverty , lack of access to duality food, cultural, poor maternal education , inadequate breast feeding ,and lack of quality health care .In contrast, protein energy malnutrition in the developed world usually occurs in the context of chronic disease. There remains much variation in the criteria used to define malnutrition, with each method having its own limitation. Early recognition, prompt management, and robust follow up are critical for best outcomes in preventing and treating PEM.

Keywords :- Protein, Energy, Malnutrition, Mental Education, Pediatrics.

I. INTRODUCTION

According to world Health organization, protein energy malnutrition (pem) refers to “an imbalance between the supply of protein and energy and the body's demant for them to ensure optimal growth and function". It can occur suddenly or gradually. It can be graded as mild, moderate or severe. In developing countries, it affects children who are not provided with calories and proteins. In developed countries, it affects the older generation. Malnutrition due to inadequate intake of calories or protein, or both. It usually is seen in children under 5 or in patients under in patients undergoing the stress of a major illness in the critically ill patient.

Hypoalubuminemia results from the depletion of stored protein and /or hepatic dysfunction. It may increase a patient's vulnerability to the toxicities of drugs Skin breakdown, infection, gastrointestinal ulceration, and other illnesses.

Definition:-

Who defines malnutrition as “the cellular imbalance between the supply of nutrients and energy and the body’s demand for them to ensure growth maintenance, and specific functions.” Malnutrition is the condition that develops when the body does not get the right amount of the vitamins, minerals, and other nutrients. It needs to maintain healthy tissues and organ function. Protein energy malnutrition (PEM) is a potentially fatal body-depetion disorder . It is the leading
cause of death in children in developing countries.

AETIOLOGY:-

Difference combination of many aetiological factors can lead to PEM in children. They are :-

- Social and economical factors.
- Biological factors.
- Environmental factors.
- Role of free Radical & Aflatoxin.
- Age of the host.

Amongst the social, Economic, Biological and Environmental factors the common cause are:-

- Lack of breast feeding and giving diluted formula .
- Improper Complementary feeding.
- Over crowding in family .
- Ignorance.
- Lack of health education .
- Familial disharmony.
- Poverty.
- Infection.

Role of free Radicals and Aflatoxin:-

Two new theories have been postulated recently to explain the pathogenesis of kwashiorkor. These include free radical damage and a flatiron poisoning. These may damage liver cell's giving rise to kwashiorkor.

Age of Host :-

- Frequent in infants and young children whose rapid growth increase nutritional requirement.
- PEM in Pregnant and lactating women can affect the growth, nutritional status and survival rates of their features, new born and infants.
- Elderly can also suffer from PEM due to alteration of GI system.

Etiology of PEM:-

Leading cause of death (less than 5 year's of age)

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Primary PEM

Protein +Energy intakes below requirement for normal growth.

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Secondary PEM

The need for growth is greater than can be supplied.

Decrease nutrient absorption

Increase nutrient losses

↓

Linear growth ceases

↓

Static weight

↓

Weight loss

↓

Wasting

↓

Malnutrition and its signs

Clinical Features:-

The clinical presentation depends on the type, severity and duration of the dietary deficiencies. The five forms of PEM are:-

1. Kwashiorkar

2. Marasmic –Kwashiorkar
3. Marasmus
4. Nutrition dwarfing
5. Under Weight Child

Classification of PEM(FAO/WHO)

S.No.	Type of PEM	Body weight as percentage of Standard	Oedema	Deficit in weight for height
1.	Kwashiorkar	80-60	+	+
2.	Marasmic Kwashiorkor	<60	+	++
3.	Marasmas	<60	0	++
4.	Nutrition Dwarfing	<60	0	Minimal
5.	Under Weight Child	80-60	0	+

Kwashiorkor:-

People who have kwashiorkor often have extremely thin arms and legs, but liver engagement and asicits (ahnormal accumulation of fluid) can distend the abdomen and disguise weight loss. Hair may turn red or yellow. anemia, diarrhea, and fluid and electrolyte disorders are common. The body's immune system is often weakened, behavioral development is slow, and mental retardation may occur. Children may grow to normal height but are abnormally thin.

Kwoshiorkor- like secondary PEM usually development in patient's who have been severally burned, suffered trauma, or had sepsis (tissue-destroying infection) or another life-threatening illness. The condition's onset is so sudden that body fat and muscle mass of normal- people may not change. Some obese patient's even gain weight.

Marasmic Kwashiorkor:-

The child show's a mixture of some of features of marasmus and kwashiorkor. This is due to the varying nature of the dietary deficiency and the social factors responsible for the disease and presence or absence of infections.

Marasmus:-

Profound weakness accompanies severe marasmus. Since the body break's down it's own tissue to use as colories, please with this condition lose all their body fat and muscle strength,and acquire a skeletal appearance most notice able in the hands and in the Temporal muscle infront of and above each ear. Children with marasmus are small for their age. Since their immune systems are weakened, they suffer from frequent infection's.Other symptoms include loss of appetite, diarrohea, skin that is dry and baggy, sparse hair that is dull brown or reddish yellow, metal retardation, behavioral retardation, low body temperature (Hypothermia), and slow pulse and breathing rates.

The absence of edema distinguish marasmus like secondary PEM, a gradual wasting process that begins with weight loss and progress to mild, moderate, or severe malnutrition (cachexia).It is usually associated with cancer, chronic obstractive.

Pulmonary associated with cancer, chronic abstractive pulmonary disease (COPD),or another chronic disease that is inactive or progressing very slowly. Some individual's have both Kwashiorkor and marasmus at the same time. This most often occurs when a person who has a chronic, impactive condition develops symptoms of an acute illness.

Nutrition Dwarfing or Stunting:-

Some children adapt to prolonged insufficiency of energy and protein by a marked retardation of growth. Weight and height are both reduced and in the same proportion so they appear superficially normal.

The Underweight Child:-

Children with subclinical PEM can be detected by their weight for age or weight for height which are significantly below normal. They may have reduced plasma albumin. These children grow smaller than their genetic potential and they are at risk of gastroenteritis, respiratory and other infections which can precipitate Frank malnutrition.

Mild to moderate PEM is probably the major reason for high mortality in children from 1 to 4 year's of age. SAM is a life threatening condition requiring immediate attention.

II. Treatment:-

Treatment strategy can be divided into three stage.:-

* Resolving life threatening condition's.
*Restoring nutrition status.
*Ensuring nutritional rehabilitation.

There are three stage of treatment:-

1. **Hospital Treatment**:-

The following condition should be corrected. Hypothermia, Hypothermia infection , dehydration, electrolyte imbalance, anemia and other vitamin and mineral deficiencies.

2. **Dietary Management**:-

The diet should be from locally available staple food inexpensive, easily digestible, evenly distributed throughout the day and increased number of feeding to increase the quantity of food.

3.**Rehabilition :-**

The concept of nutritional rehabilitation is based on practical nutritional training for mother's in which they learn by feeding their children back to health under supervision and using local foods.

Prevention:-

Breastfeeding baby for at least six months is considered the best way to prevent early- childhood malnutrition. Preventing malnutrition in developing countries is a complicated and challenging problem. Providing food directly during famine can help in the short term, but more long term solutions are needed, including agricultural development, public health program (especially programs that monitor growth and development, well as programs that provide nutritional information and supplements, and improved food distribution systems. Programs that distribute infant formula and discourage breastfeeding should be discontinued, except in areas where many mother's are infected with HIV.

Every patient being admitted to a hospital should be screened for the presence of illness and conditions that could lead to PEM. The nutritional status of patient at higher than average risk should be more throughly assessed and periodically reevaluated during extended hospital stays or nursing home residence.

III. Conclusion:-

The supply of protein and energy imbalance the body’s demand ensure optimal growth of function. It can suddenly or gradually graded mild, moderate or sever. Who children can affect are not provided calories & protein, older generation .It usually seen children under 5 or protein under major stress & illness.(Hypoalbuminemia). It increase patients vulnerability to toxicities drugs, skin breakdown, infection gastrointestinal ulcerations & other illness.

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