



# “UNDERSTANDING PROTEIN ENERGY MALNUTRITION WITH HOMOEOPATHIC MANAGEMENT”

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PEM is global health problem, more prevalent in the developing countries. **‘It often starts in the womb and ends in the tomb’**. PEM is a disease of multideprivation and poverty, affecting nearly 150 million children under the age of five years in the world. Out of the 120 million children in India, over 75 million are estimated to suffer from visible PEM.<sup>1</sup>

Protein energy malnutrition (PEM) is manifested primarily by inadequate dietary intake of protein and energy, either because the dietary intake of these two nutrients are less than required for normal growth or because the requirements for growth are more than can be supplied by what, otherwise, would be adequate intakes for growth. However, PEM is almost always accompanied by deficiencies of other nutrients.<sup>2,3</sup>

The World Health Organization (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.”<sup>4</sup>

Protein energy malnutrition (PEM) in simple words results from the intake or absorption of fewer calories than energy spent. Bad economy, low income, large and closely spaced families, early marriages, no gap between two pregnancies, low birth weight babies, teen-age mother with lack of milk to feed, lack of accessibility and affordability to treatment and on another side the new age good income, nuclear families, late marriages, single child, good weight babies, working mother with lack of time to feed, lack of care in spite of accessibility and affordability to treatment. These form the widespread extremes of the ecology of the Protein energy

malnutrition (PEM) in India today.<sup>5</sup>

Infection can be the underlying cause of Protein energy malnutrition (PEM), given that infection can influence intake, absorption, and other aspects of nutrient metabolism. The close association between Protein energy malnutrition (PEM) and infection has been likened to a vicious cycle in which Protein energy malnutrition (PEM), immunodeficiency, and infection are closely linked. Within this cycle is found increased morbidity and mortality associated with Protein energy malnutrition (PEM).<sup>6</sup> Nutrition has major influence on many basic indicators of health of populations, especially in developing countries. Infectious diseases contribute a large part of these indicators, and malnutrition is often the underlying cause of infectious diseases. In India children under five years are wasted due to Protein energy malnutrition (PEM). According to the national family healthy survey, mild to moderate Protein energy malnutrition (PEM) continues to exist in around 48% of the pediatric population.<sup>7,8</sup>

Dr. Hahnemann dictates that a Homeopathic medicine is to be selected on the totality of symptoms (§ 7) of a case which is formed only by the deviations in health of mind and body of the patient (§ 6). Utmost importance is to be given to a patient's striking, singular, uncommon and rare sign and symptoms (§ 153). Higher the correspondence of the remedy symptoms to these, higher the rate of successful treatment.<sup>9</sup>

#### **EPIDEMIOLOGY:-**

According to the United Nations Children's Fund (UNICEF), PEM is an invisible emergency much like the tip of an iceberg, where its deadly consequences are hidden from view. In 2005, 20% of children younger than 5 years in low-to-middle income countries were estimated to be underweight, while 32% (178 million) children younger than 5 years in developing countries were estimated to be stunted. Worldwide, only 36 countries account for 90% of all stunted children when countries with stunting prevalence of at least 20% were considered. The highest prevalence of stunting was in central Africa and south-central Asia, although the largest numbers of children, 74 million, live in southern Asia. India alone has 34% of the world's stunted children because of its large population, although there is significant variation between its states. The global estimate of wasting is 10%, with south-central Asia estimated to have the highest prevalence and total number affected, 16% and 29 million respectively. Sub-Saharan Africa has about 25% of the world's underweight children younger than 5 years of age, with Congo, Ethiopia, and Nigeria being the nations affected worst.<sup>13</sup>

**PATHOPHYSIOLOGY IN PEM:-** The malnourished child adapts maximum to the unfavourable circumstances as well as to the calorie and protein gap. This can be compared to the state of hibernation in animals. Malnourished children reduce their activity, curtail their growth and bring down their basal metabolic growth in order to save energy for survival.<sup>1</sup>

PEM is caused by starvation. It is the disease that develops when protein intake or energy intake, or both, chronically fail to meet the body's requirements for these nutrients.<sup>16</sup> PEM has always been a common disease,

and humans have adaptive mechanisms for slowing and, in most cases, striking its progress. Fat loss is slowed by a diminution in energy spending that the body accomplishes both by plummeting the metabolic rate per unit of the metabolically active tissues and by jettisoning some of the body's lean tissue (protein) store.<sup>18</sup> Such a protein-depleted body also requires less dietary protein. Muscle protein, which normally accounts for about 80% of the lean tissue mass, bears the brunt of the loss, whereas the "central" lean tissues (liver, gastrointestinal tract, kidneys, blood and immune cells) are relatively spared. As long as the starvation ration of energy and protein is not too low, successful adaptation will reduce energy and protein requirements to match it, restoring homeostasis and maintaining key physiologic functions. The physiologic cost of this alteration is a lowered metabolic rate and reduced muscle mass ; its clinical consequences include muscular weakness and functional disability, reduced cardiac and respiratory capacity, mild hypothermia and a reduced body protein reserve.<sup>19</sup>

**CLINICAL FEATURES OF PROTEIN ENERGY MALNUTRITION:-** Clinical examination provides clues for assessing the nutritional status as well as the severity of the disease. Jelliffe has classified the clinical signs for easy identification and interpretation.

**(a) Growth retardation:** It is the most common feature of PEM, evidenced by weight loss, wasting and stunting. Growth retardation is present even in kwashiorkor case.



- (b) **Hepatomegaly:** This is due to fatty infiltration, which starts in the periphery of the lobule and gradually extends to the centre. Histological evidence will be present, even when fatty liver is not clinically evident.
- (c) **Hair changes:** The changes are more evident at the root of the hair in acute PEM. The hair becomes sparse, easily pluckable and hypo-pigmented, **hypochromotrichia**. In some children, the hair becomes red and this led to the term red boy to denote kwashiorkor. When the nutritional status is regained, the root becomes pigmented and the tip is seen hypo-pigmented-**flag sign**.
- (d) **Skin changes:** These indicate severe degree of undernutrition and may occur rapidly in fatal cases. The skin becomes hypopigmented, hyperpigmented, erythematous or jet black in colour. This **flaky paint dermatosis** is pathognomonic. It occurs more often in the extremities than trunk and the hyperpigmented patches peel off to expose raw or hypopigmented areas. The cracked lesion in the flexures, groin, buttocks which is infected and ulcerated is called **crazy pavement dermatosis**. Deficiencies of tyrosine, niacin, zinc and vitamins are attributed in pathogenesis of these skin changes. Secondary infection with fungi and bacteria, especially cutaneous diphtheria also may occur. The term **nutritional dermatosis** is also applicable.
- (e) **Mucosal changes:** These are due to various vitamin deficiencies and secondary infection including moniliasis. Glossitis, stomatitis, cheilosis etc., are common.
- (f) **Purpura or bleeding:** It may be seen in those with Gram-negative septicemia, DIC and vitamin C and K deficiency.
- (g) **Oedema:** It is seen in kwashiorkor and marasmic kwashiorkor. Mooning of the face is often noted in kwashiorkor. Effusion into the serous cavities may occur in severe edema. Isolated ascites may be due to associated liver disease or intestinal TB.
- (h) **Mental changes:** Irritability and apathy are the common changes noted in PEM. They are multifactorial in origin. Affected children fail to interact with the environment and even with the mother. Social smile also regresses. Brain edema, electrolyte imbalances, hypokalemia and hypomagnesaemia are suggested to be the causes. Alteration in neurotransmitters synthesis and release is found to be another major cause. PEM reduces playful exploratory activity, motivation and arousal.
- (i) **Tremors:** These are characteristically seen during treatment. Deficiency of vitamin B factors due to increased demand, electrolyte imbalance, imbalance in the production of inhibitory substances like GABA and dysmyelination are thought to be the causes. Frequent blinking, tremulous cry due to vocal cord tremor and tremors of the body designated **kwashi shake** are rarely noted. The tremors generally subside after sometime.
- (j) **Nervous system effects:** There is slow reduction in brain weight compared to the body weight and an increased brain weight to body weight noted in malnourished. . Studies have shown reduced brain weight, cell count, synaptic connections, myelin content etc.,

## PROGNOSIS AND MORTALITY IN PROTEIN ENERGY MALNUTRITION

- Severe PEM is associated with infection, especially of the lower respiratory tract, and with marked fluid and electrolyte disturbances as a result of diarrhoea.
- Factors which influence in severe PEM include infection, electrolyte and fluid imbalance, weight deficit, marked hepatomegaly, depressed sensorium.<sup>20</sup>
- Among the complications, hypoglycaemia, hypothermia, septicaemia, dehydration and electrolyte imbalance, CCF, severe anemia, convulsions can be seen.<sup>1,21</sup>
- Mortality in severe PEM is high.<sup>20</sup>

## MANAGEMENT IN PROTEIN ENERGY MALNUTRITION PRINCIPLES:

Therapy is aimed at reducing mortality and accelerating recovery.

**1** Evaluation for the severity of PEM, presence or absence of systemic infections, other nutritional deficiencies and electrolyte disturbances.

**2** Complications of undernutrition, sequelae and death are prevented and treated if present, by careful surveillance and prompt remedial action.

**3** The intake of food is prompted by all available means. The aim is to shorten the duration of hospital stay and facilitate rehabilitation and full recovery.

**4** Epidemiological factors responsible for undernutrition are recognised and eliminated.<sup>2,20,21</sup>

- (a) **PREVENTION OF PEM:-** Exclusive breast feeding of infants for first 6 months.
- (b) nutritional supplementation to be introduced in the diet of infants after the age of 6 months.
- (c) complementary food should be based on a judicious mixture of staple cereal and legumes, so that all amino acids are compensated, food should be energy dense, thick in consistency and given hygienically.
- (d) protein rich of high biological value according to affordability to be given.
- (e) Vaccination for vaccine preventable disease to be given.
- (f) iatrogenic restriction of feeding during illness restricted.
- (g) proper spacing of births in family to be encouraged.
- (h) usage of integrated health package for acute infections;
- (i) nutrition education about nutritional quality of various locally available and culturally accepted low cost foods;
- (j) vigorous promotion of family planning;
- (k) encouraging women in income generating activities
- (l) promotion of education and literacy in the community
- (m) providing technological measures.
- (n) nutritional surveillance and
- (o) Nutritional planning. 2,21

## **HOMOEOPATHIC MANAGEMENT**<sup>5,35,36,37,38</sup>

### **ARESNIC ALBUM**

Thin & delicate with fine skin & hair. Gradual loss of weight from impaired nutrition. Malarial cachexia .Flushes easily, pallor Highly strung, easily frightened. Over sensitive to smell, touch, noise, cold .Mentally & physically agile, neat & tidy. Restless, but tires quickly, vivid imagination, nightmares Worries about health, fears being alone, burglars, darkness, poverty. Asthma & diarrhoea alternates, likes warm food & drinks, fatty foods, sour foods . Prevailing debility, exhaustion, and restlessness Burning pains., burning relieved by heat Unquenchable thirst. Green discharges. kala-azar, anaemia and chlorosis

Worse: from cold, dry, windy weather, between 12-2am

Better: warmth, movement, lying down from head propped up, wants to be covered except head

### **ABROTANUM**

Old looking infant or children, with wrinkles on face Emaciation of legs with bloated abdomen. Cannot hold head up due to weakness of neck Peevish look, as if doing to do something cruel.

Cross, irritable, ill natured and violent.Feebleness and dullness of mind, thinking difficult Loss of comprehension.Easily fatigued by conservation or mental effort.Anxious, depressed look, aversion being handled.

Marasmus, especially of lower extremities only, spreading upwards, yet with good appetite. Bleeding from navel.Rheumatism following checked diarrhoea. Ill effects of suppressed conditions especially in gouty subjects Tuberculous peritonitis. After operation upon the chest for hydrothorax or empyemia, a pressing sensation remains. Nosebleed and hydrocele in boys.Great weakness after influenza.

Worse: cold air, checked secretions

Better: motion

### **AETHUSA CYNAPIUM**

No power to hold head, stand, without any ailment Weak, sick looking babies Smell sour.

Restless, anxious, crying Unconscious, delirious. Inability to think, to fix the attention, brain fag. Idiocy may alternate with furor and irritability Love for animals.Anxious mother puts child to breast as soon as child cries, creating gut disturbance. Affected by errors in diet, milk in any form, hot weather, mental exertion. Violent

sudden vomiting of milk as soon as swallowed or in large curds, sleepiness and hunger, Symptoms set in with violence

Worse: 3 to 4 a.m. & evenings, warmth, summer

Better: in open air & company

## **AURUM METALLICUM**

Dark complexion, black hair and eyes

Child is always an undeveloped child. It is not so much a question of undersize and underweight as that it simply does not grow up.

An undescended testicle, a very poorly-developed scrotum.

Sallow, sluggish, dispirited with poor memory Respond to contradiction

Frightfully sensitive, grieves, sobs in his sleep Hyperaesthesia to pain, noise

Suffer from: persistent catarrh, infected hypertrophied tonsils, adenoids, acute otitis with perforation of the drum Very easily get out of breath and may get suffocative attacks with acute difficulty in breathing,

Frightfully sensitive to any disappointment

Worse: cold weather, when getting cold, winter, from sunset to sunrise

## **BARYTA CARB**

Dwarfish child, mentally & physically Prominent abdomen tendency to salivation, Late in speaking, walking, dentition, delayed gaining weight. Development: late in speaking, late in walking, late in dentition, slow in gaining weight.

School: inattentive, never concentrates on a lesson, Appears to learn something today and has completely forgotten it tomorrow. Very easily tired out, cross and irritable on sustained effort Excessively shy, always touchy. Scared of being left alone, open fields, strangers, night terrors. Forgetfulness, inattentive, lack of concentration. Liable to get colds which develops into quinsy Enlarged glands: cervical, abdominal. Crusty skin eruption on the head and crusty margins to the eyelids, they may have a definite Blepharitis. Liable to get intensely irritable skin eruptions, often without much eruption but with intense irritation.

Worse: while thinking, from washing, lying on painful side

Better: walking in open air

## **BORAX VENETA**

Poorly nourished, soft, flabby Herpetic eruptions

Much more sensitiveness to damp

Acute digestive upsets, diarrhoea, vomiting & colic from fruits

Salivation & dribbling with stomatitis Either enuresis or pain on micturition; pain on micturition. The typical chronic constipation, the hard stool.

Sudden noise terrifies, Idle, bored & hence change from one thing to another Irritable, ends up in a violent passion, kicks & screams

Worse: from downward motion, damp, concentration, fruits Better: pressure, evening, cold weather

## **CALCAREA PHOSPHORICA**

Delicate tall thin or scrawny. Head disproportionately large, delayed closure of fontanelle, tardy dentition. With dirty brownish skin

Anaemic children who are peevish, flabby, have cold extremities. Feeble digestion.

Bone disease non-union of fractured bones. Anaemias after acute diseases and chronic wasting diseases. Numbness and crawling are characteristic sensations Tendency to perspiration and Glandular enlargement Scrofulosis, chlorosis and phthisis.

Peevish, forgetful; after grief and vexation. Always wants to go somewhere.

Worse: exposure to damp, cold weather, melting snow, any change of weather

Better: in summer; warm, dry atmosphere.

## **CARBOVEGETABILIS**

Heavy, sallow complexion, cold bluish extremities Physical than mental sluggishness. Most violent nightmares

Slow in thinking; dull mentally, slow reaction time, lack in go. Easily discouraged, rather dispirited, become peevish.

Very hot & sweaty at night, sour-smelling

Dull, occipital headache on forcing for school, tight hat Persistent epistaxis in the night, Constipation, lot of flatulence

Attacks of diarrhoea: offensive, watery, definite aversion to fats, and frequently have a marked aversion to milk.

All complaints after measles, bronchitis or pneumonia, whooping cough

Worse: sweets, fat, milk, evening, night Better: eructations, fanning, cold

## **IODUM**

Exceedingly thin, dark complexioned, with enlarged lymphatic glands Voracious appetite but gets thin. Intensely restless. Rapid metabolism: loss of flesh great appetite. Hungry with much thirst. Anxiety when quiet. Present anxiety and depression, no reference to the future. Sudden impulse to run and do violence. Forgetful. Must be busy. Fear of people, shuns every one. Melancholy. Nutritive disturbances are the pathological conditions at the basis of its symptomatology. Sluggish vital reaction, hence chronicity in many of its aspects. Rapid emaciation, notwithstanding good appetite. Glandular atrophy, wasting diseases and in scrofulous patients. Acute affections of the respiratory organs. Weakness and loss of breath going upstairs

Worse: when quiet, any kind of heat, right side

Better: walking about, in open air, after eating

## **NATRIUM MURIATICUM**

Small or underweight for age Slow in learning to walk or talk, Dark skin, sallow rather earthy looking. Perspire easily, face flushed and shiny Prone to hang nails. Definite dislike of being handled; it has a very definite dislike of being interrupted with and is liable to burst into tears. Well-behaved, responsible & conscientious Sensitive to criticism Tends to suffer headaches from pressure of school work Excessive desire for salt. Small enlarged cervical glands in the back of thin neck. Crusty skin eruption restricted to the margin of the hair Irregular mapping on the tongue. Chilly, sensitive to draughts, will shiver from a change of temperature, and start sneezing from a change of temperature. Very sensitive to heat - stuffiness particularly - and to exposure to the sun, and is very liable to develop a sunheadache.

Worse: noise, music, warm room, lying down about 10 a.m, at seashore, mental exertion, consolation, heat, talking.

Better: open air, cold bathing, going without regular meals, lying on right side, pressure against back, tight clothing.

## **PHOSPHORUS**

Tall, slender persons, narrow chested, with thin, inclined to stoop Transparent skin, delicate eyelashes, long silky hair, graceful manners Sanguine temperament, weakened by loss of animal fluids with great nervous debility. Emaciation, amative tendencies.

Great lowness of spirits, easily vexed.. Fearfulness, as if something were creeping out of every corner, clairvoyant state, dread of being alone Great tendency to start, over-sensitive to external impressions. Loss of memory. Precocious, open, makes friend with all age groups, likes to be Magnetized.

Child catches cold easily and there is marked tendency to bronchitis Pneumonia in children involving left lower lung. Retarded development of speech in children. Cholera infantum, painless, copious debilitating involuntary diarrhea as if anus remained wide open. Oozing of mucus from constantly open anus with tenesmus. Constipation: long, narrow, hard like a dog's, difficult to expel.

Worse: touch; physical or mental exertion; twilight; warm food or drink; change of weather, from getting wet in hot weather; evening; lying on left or painful side; during a thunder-storm; ascending stairs.

Better: in dark, lying on right side, cold food; cold;

**PULSATILLA:**-Small, fair, fine-boned & inclined to blush, bright, cheerful or plump, with darker hair, more languid. Mild, gentle, yielding disposition. Weeps easily, timid, irresolute, sad, crying readily; weeps when talking; changeable, contradictory. Lively by day, nervous at night . Fears in evening to be alone, dark, ghost, likes sympathy Children like fuss and caresses, easily discouraged. Sensitive to weather changes, particularly to cold flag in hot weather. Mucous membranes are all affected .After abuse of Iron tonics, and after badly-managed measles Impairment of health is referred to age of puberty. Recurrent upper respiratory tract infections

Worse: from heat, rich fat food, after eating, towards evening, warm room, lying on left or on painless side. Hanging feet down. Better: open air, motion, cold applications, cold food and drinks, though not thirsty

## **SILICEA TERRA**

Imperfect assimilation and consequent defective nutrition. Fine skin and pale face. Light complexion and lax of muscles

Scrofulous rachitic children with large head open fontanelles. Distended hot and hard abdomen, Slow in walking and wasted in body especially legs. Do not tolerate breast milk and loses weight. Perspiration over forehead.

Yielding, faint-hearted, anxious. Nervous and excitable. Sensitive to all impressions, Brain-fag. Obstinate, headstrong children. Abstracted, fixed ideas; thinks only of pins, fears them, searches and counts them.

Diseases of bones, caries and necrosis.re-absorb fibrotic conditions and scar-tissue. Periodical states; abscesses, quinsy, headaches, spasms, epilepsy, feeling of coldness before an attack.

Ill effects of vaccination. Suppurative processes. Ripens abscesses since it promotes suppuration.cold, chilly, hugs the fire, wants plenty warm clothing, hates drafts, hands and feet cold, worse in winter

Lack of vital heat, , taking cold , Prostration of mind and body, Intolerance of alcoholic stimulant. Development and growth: slowness, slow recovery, delayed aggravations, late in developing relationships.

Worse: new moon, in morning, from washing, during menses, uncovering, lying down, damp, lying on, left side, cold.

Better: warmth, wrapping up head, summer; in wet or humid weather.

### **TUBERCULINUM BOVINUM KENT**

Light-complexioned, Narrow-chested subjects Rapid emaciation. Lax fiber, low recuperative powers. Highly restless, always tired; motion causes intense fatigue; aversion to work; wants constant changes.Mentally deficient children. Mania and melancholia, insomnia and sopor. Irritable, especially when awakening..depressed, melancholy. Fear of dogs. Animals especially. Desire to use foul language, curse and swearIncipient tuberculosis,susceptible to changes in the weather. Epilepsy, neurasthenia and in nervous children.Diarrhoea in children running for weeks, extreme wasting, bluish pallor, exhaustion.Enlarged tonsils.Skin affections, acute articular rheumatism.Very sensitive, mentally and physically.General exhaustion. ArthritisWorse: motion, music; before a storm; standing; dampness; from draught; early morning, and after sleep

Better: open air

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