Protein-Energy Malnutrition Clinical Presentation

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History

Low intake of calories or an inability to absorb calories is the key factor in the development of kwashiorkor. A variety of syndromes can be associated with kwashiorkor.[13]

In children, the findings of poor weight gain or weight loss; slowing of linear growth; and behavioral changes, such as irritability, apathy, decreased social responsiveness, anxiety, and attention deficit may indicate protein-energy malnutrition. In particular, the child is apathetic when undisturbed but irritable when picked up. Kwashiorkor characteristically affects children who are being weaned. Signs include diarrhea and psychomotor changes.

Adults generally lose weight, although, in some cases, edema can mask weight loss. Patients may describe listlessness, easy fatigue, and a sensation of coldness. Global impairment of system function is present.

Patients with protein-energy malnutrition can also present with nonhealing wounds. This may signify a catabolic process that requires nutritional intervention. Lewandowski et al.[14] reported kwashiorkor and an acrodermatitis enteropathica-like eruption after a distal gastric bypass surgical procedure. Kwashiorkor was reported in an infant presenting with diarrhea and dermatitis, due to infantile Crohn disease. [15] The diarrhea and dermatitis improved in 2 weeks with treatment.

A 3-year-old child with coexisting celiac and Hartnup disease that resulted in kwashiorkor, anemia, hepatitis, hypoalbuminemia, angular cheilitis, glossitis, conjunctivitis and diffuse alopecia, erythematous skin, desquamation, erosions, and diffuse hyperpigmentation was reported by Sander et al in 2009.[16] With the proper nutritional supplementation, these findings resolved.

"Cupping" (placing suction cups on the body to cure disease) on the abdomen in patients with diseases resulting in abdominal swelling (eg, kwashiorkor) can give interesting clinical presentations.[17]

Physical

In marasmus, the child appears emaciated with marked loss of subcutaneous fat and muscle wasting. The skin is xerotic, wrinkled, and loose. Monkey facies secondary to a loss of buccal fat pads is characteristic of this disorder. Marasmus may have no clinical dermatosis. However, inconsistent cutaneous findings include fine, brittle hair; alopecia; impaired growth; and fissuring of the nails. In protein-energy malnutrition, more hairs are in the telogen (resting) phase than in the anagen (active) phase, a reverse of normal. Occasionally, as in anorexia nervosa, marked growth of lanugo hair is noted.

Kwashiorkor typically presents with a failure to thrive, edema, moon facies, a swollen abdomen (potbelly), and a fatty liver. When present, skin changes are characteristic and progress over a few days. The skin becomes dark, dry, and then splits open when stretched, revealing pale areas between the cracks (ie, crazy pavement dermatosis, enamel paint skin). This feature is seen especially over pressure areas. In contrast to pellagra, these changes seldom occur on sun-exposed skin.

Depigmentation of hair causes it to be reddish yellow to white. Curly hair becomes straightened. If periods of poor nutrition are interspersed with good nutrition, alternating bands of pale and dark hair, respectively, called the flag sign, may occur. Also, hairs become dry, lusterless, sparse, and brittle; they can be pulled out easily. Temporal recession and hair loss from the back of the head occur, likely secondary to pressure when the child lies down. In some cases, loss of hair can be extreme.

Hair can also become softer and finer and appear unruly. The eyelashes can undergo the same change, having a so-called broomstick appearance.

Nail plates are thin and soft and may be fissured or ridged. Atrophy of the papillae under the nail may have no clinical dermatosis. However, inconsistent cutaneous findings include fine, brittle hair; alopecia; impaired growth; and fissuring of the nails. In protein-energy malnutrition, more hairs are in the telogen (resting) phase than in the anagen (active) phase, a reverse of normal.

Inflammatory bowel diseases, such as Crohn disease and ulcerative colitis, may also produce skin manifestations secondary to malnutrition.[18]

In elderly persons, an indicative sign of malnutrition is delayed healing and an increased presence of decubitus ulcers of stage III or higher.

Vitamin C deficiency commonly manifests in elderly persons as petirollicular hemorrhages, petechiae, gingival bleeding, and splinter hemorrhages, in addition to hemorrhages and subperiosteal hemorrhages. Anemia may result, and wound healing may be impaired. Niacin deficiency clinically manifests as pellagra (ie, dermatitis, dementia, diarrhea) in advanced cases. The dermatitis manifests in sun-exposed areas, including the back, neck (Casal neckline), face, and dorsum of the hands (gauntlet of pellagra) initially as painful erythema and itching. Subsequently, vesicles and bullae may develop and erupt, creating crusted, scaly lesions. Finally, the skin becomes rough and covered by dark scales and crusts. Striking demarcation of affected areas from normal skin is noted.

Protein-energy malnutrition is also associated with an increased likelihood of...
Protein-Energy Malnutrition Clinical Presentation: History, Physical, Causes

A study by Harima et al reported on the effects of an evening snack in patients receiving chemotherapy for hepatocellular carcinoma. They reported a lower nonprotein respiratory quotient in patients with advanced hepatocellular carcinoma compared with patients with cirrhosis who did not have hepatocellular carcinoma and in patients with early-stage hepatocellular carcinoma. Patients with cirrhosis and advanced hepatocellular carcinoma who were receiving chemotherapy and who received the late-evening snack had an improved nonprotein respiratory quotient, branched-chain amino acid/tyrosine ratio, alanine aminotransferase level, and prealbumin level compared with controls.[19]

Causes

Worldwide, the most common cause of malnutrition is inadequate food intake. Preschool-aged children in developing countries are often at risk for malnutrition because of their dependence on others for food, increased protein and energy requirements, immature immune systems causing a greater susceptibility to infection, and exposure to nonhygienic conditions.

Another significant factor is ineffective weaning secondary to ignorance, poor hygiene, economic factors, and cultural factors. The prognosis is worse when protein-energy malnutrition occurs with HIV infection. Gastrointestinal infections can and often do precipitate clinical protein-energy malnutrition because of associated diarrhea, anorexia, vomiting, increased metabolic needs, and decreased intestinal absorption. Parasitic infections play a major role in many parts of the world.

In developed countries, inadequate food intake is a less common cause of malnutrition; protein-energy malnutrition is more often caused by decreased absorption or abnormal metabolism. Thus, in developed countries, diseases, such as cystic fibrosis, chronic renal failure, childhood malnourishments, cardiac heart disease, and neuromuscular diseases, contribute to malnutrition. Malnourished patients, inappropriately managed food allergies, and psychiatric diseases, such as anorexia nervosa, can also lead to severe protein-energy malnutrition.

Population in both acute-care and long-term facilities are at risk for clinically significant involuntary weight loss (IWL) that can result in protein-energy malnutrition. IWL is defined as a loss of 4.5 kg or greater than 5% of the usual body weight over a period of 6-12 months. Protein-energy malnutrition occurs when weight loss of greater than 10% of normal body weight occurs.

Elderly persons often develop malnutrition, common causes of which include decreased appetite, dependency on help for eating, impaired cognition and/or communication, poor positioning, frequent acute illnesses with gastrointestinal losses, medications that decrease appetite or increase nutrient losses, polypharmacy, decreased thirst response, decreased ability to concentrate urine, intentional fluid restriction due to fear of incontinence or choking if dysphagia, psychosocial factors such as isolation and depression, monotony of diet, higher nutrient density requirements, and other demands of age, illness, and disease on the body.

Elderly patients are often at risk for protein-energy malnutrition because of inadequate nutrition, which has been determined to be a common comorbid factor for increased morbidity and mortality in elderly burn victims.[20]

Patients with liver cirrhosis are also at risk for protein-energy malnutrition, which is a risk factor that portends a poor prognosis for survival. This risk correlates with the degree of liver injury and the etiology of liver injury, with the risk of protein-energy malnutrition being more severe in persons with alcoholic cirrhosis than in those with nonalcoholic cirrhosis.

Patients on long-term hemodialysis also may develop protein-energy malnutrition; this is associated with increased morbidity and mortality.

Patients with squamous cell carcinoma of the esophagus are at risk for protein-energy malnutrition.

Bariatric surgery can be associated with iatrogenic kwashiorkor.[21, 22]

Differential Diagnoses

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