

TYPICAL DERMATOSIS IN KWASHIORKOR

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ABSTRACT

Protein-energy malnutrition is the most widespread nutritional deficiency disorder in India, commonly occurring in children aged 6 months-2 years, as per the National Family Health Survey, 2007. The dermatologic manifestations are more florid and characteristic in kwashiorkor than in marasmus. Here, we present a case of a 1½ years old male, with extensive skin lesions, owing to severe malnutrition. Malnourishment is one of the foremost conditions seen in the developing countries. It is essential to provide adequate nutritional support to the growing children and to impart proper education to the mothers with regard to weaning and care during the illness of children aged under 5 years.

Keywords: Protein-energy malnutrition, Edematous malnutrition, Kwashiorkor, Skin changes, Flaky paint dermatosis.

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INTRODUCTION

Protein-energy malnutrition (PEM) is a state of undernutrition found among children in the developing countries owing to insufficient food supply caused by socioeconomic, political, and infrequently environmental factors. India alone accounts for housing 34% of the world's stunted children [1]. Kwashiorkor a type of PEM is a life-threatening condition in children aged under 5 years, in poorly developed countries [2]. Kwashiorkor is attributed to adaptation to two circumstances; the first one being continued prolonged period of stress of malnutrition, and the second abrupt worsening by a fulminant infection such as pneumonia, diarrhea, or viral infections such as measles [3].

CASE REPORT

A 1½ years old male child presented with complaints of fever, cough, and history of scaly lesions on the face and the back for 8 days to Regional Advanced Pediatric Care Centre at District Hospital. Patient's mother also gave a history of diarrhea and weight loss since 2½ months. The child was immunized for date with normal developmental milestones. On examination, the child was irritable on handling; the hair was sparse, thin, and lusterless; generalized edema; mild hepatomegaly; weight for age (62%); and weight for height (66%). Facial puffiness with periorbital edema was seen. The skin lesions, more prominent on the back and chest, were dry, scaly, patchy, macular, and pigmented befitting the condition "flaky paint dermatoses (Figs. 1 and 2)."

Biochemical parameters

Total protein - 3.5 g/dL, albumin - 1.3 g/dL, hypokalemia (2 mEq/L), hypocalcemia (5.8 mg/dL), elevated C-reactive protein - 11 mg/L, random plasma glucose - 252 mg/dL, serum osmolality - 279 mOsm/L, urine osmolality - 365 mOsm/L; the ratio of urine osmolality and serum osmolality was 1.30. Peripheral smear showed microcytic hypochromic anemia with neutrophilic leukocytosis.

Management

The child was treated with intravenous fluids and antibiotics, later followed by nasogastric feeds. In the interim, the patient was monitored for serum potassium and phosphate levels. The child was given multivitamins, including vitamin K, supplemented with zinc and calcium tablets. For the skin, dermatology opinion was sought and

emollients prescribed along with hydrocortisone cream. The child improved clinically and was discharged after two weeks with advice to continue multivitamins and high-protein diet.

DISCUSSION

Nutritional practices such as improper breastfeeding and weaning, lack of proper diet during periods of illness, influence the growth and development of the children [4,5]. Kwashiorkor is a very severe form of PEM [6]. In this child, the clinical manifestations corroborated with biochemical parameters suggestive of kwashiorkor. According to the Indian Academy of Pediatrics classification, the child was classified as Grade II malnutrition [2]. Edema is one of the key features seen in kwashiorkor to differentiate it from marasmus, another entity classified under PEM. Here, the child presented with facial puffiness, periorbital edema, and mild generalized edema attributed to hypoalbuminemia [7]. Dry, sparse, lustreless, also brittle, and easily pluckable hair was found, especially, over the temple and occipital regions [8]. The skin changes initially started with erythroderma and generalized edema, followed by the characteristic flaky paint dermatoses [9]. This type of exfoliative erythroderma and involvement of hair can be attributed to the various



Fig. 1: Irritable child with hair changes on the scalp and skin lesions on the chest



Fig. 2: Characteristic flaky paint dermatosis lesions on the back

macro- and micronutrient deficiencies and also due to deficiency of essential fatty acids [8,10].

The clinical features presented in kwashiorkor can also be attributed to increased free radical production, which leads to increased lipid peroxidation and production of toxic carbonyls [11]. The free radical production may be secondary to a noxious stimulus, which could be either of infectious etiology or toxins present in the foods. The increased free radical production may be due to lack of protective mechanisms, resulting from dietary deficiency of micronutrients, thereby causing edema, fatty liver, pigmentary changes, diarrhea, and mental changes distinctive of kwashiorkor [11,12].

Vasanth [13], in her study, has shown that there was decreased soluble collagen and retardation of collagen maturation, in protein deficiency as well as calorie deficiency states. The significant reduction in the soluble collagen, which is a precursor for mature collagen, causes decreased total collagen content, indicating a reduction in the amount of collagen synthesized. These mechanisms play a significant role in the structural stability of the ensuing dermatological manifestations in kwashiorkor.

CONCLUSION

Kwashiorkor is a serious nutritional disorder in the developing countries. It is essential to provide adequate nutritional support to check the frequency of acute malnutrition in growing children following dehydration. Health education and awareness during pregnancy and newborn period may reduce the incidence of malnutrition. Periodic screening measures to identify children at risk of developing malnutrition are mandatory in primary health centers.

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