

Kwashiorkor in the United States secondary to a rice milk diet

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Introduction

Kwashiorkor, is a Ghanaian word that literally translates into the phrase “the disease of the disposed child.”² It is a disease that is classical seen is an infant who was weaned form the breast milk when a new child is born. Kwashiorkor is characterized by symmetric pitting edema that begins in the lower extremities and spreads to the rest of the body as the disease progressively worsens. Other symptoms include hepatomegaly, thin peeling skin with hyperkeratosis, hyperpigmentation and bradycardia with hypotension. The major pathological insult sustained in Kwashiorkor is believed to be a dietary lack of protein. Lack of dietary proteins leads to decrease albumin and lipoprotein synthesis, causing the characteristic signs of edema and fatty liver that are seen in the disease.²

History & Physical

We present a case of a 22-month old male with a reported history of atopic dermatitis who presented with worsening diffuse rash for 2 months. The patient’s rash was described as a red scaly plaque on the left posterior knee that later spread to include all

extremities, the trunk, and the face. The rash was associated with flaking of the skin. There were no reported fevers, but the mother noted increased irritability, decreased urine output, and increased swelling of the hands, feet, and face 3 days prior to presentation. In addition, the patient was on oral prednisone, cetirizine, and triamcinolone cream with no improvement. The patient’s history included several food allergies such as milk, soy, eggs and peanuts. He was also not tolerating any solid food and had a diet that consisted solely of rice milk for 4 months prior to presentation.

On exam the face, trunk and extremities showed diffuse superficial desquamation with areas of serpiginous scale. There was also diffuse hypopigmentation with islands of bronze/brown skin noted to be the patient’s normal color. The face, bilateral hands, and feet also had 3+ edema. Labs were noteworthy for an albumin of 1.7.

A diagnosis of kwashiorkor disease was made. The primary team placed nutrition and allergy consults, and a registered dietitian started the patient on a



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hypoallergenic formula (Elacare Jr 30kcal/oz). Within 3 days, there was improvement in the patient's skin and irritability.

Discussion

This case illustrates a new theme in the literature of increased incidence of kwashiorkor seen in developed countries due to dietary changes in otherwise healthy children. Several cases have shown protein deficiency from food fads, lack of dietary knowledge, or allergen avoidance. Five prior cases have been associated with a rice milk diet, similar to our presentation. Two of twelve cases in a recent case series noted an adequate diet but with "social chaos" contributing to the presentation, suggesting that social factors played a greater role in the patient not receiving proper nutrition, rather than a lack of resource.⁴ Additionally, many cases were previously diagnosed as having atopic dermatitis, which then commonly prompts food avoidance. This highlights the importance of a detailed history including food intake and social issues. Kwashiorkor is relevant even in developed countries and should be considered in patients with persistent skin disease despite adequate treatment and those with dietary restrictions.

Histology

Skin changes seen in Kwashiorkor commonly involve the flexor surfaces of the body. The nonspecific changes are often described as "flakey paint" dermatitis. Patches may mature and peel off, leaving areas of raw surface below them. Epidermal atrophy is often observed in the stratum granulosum and stratum spinosum.⁵

Treatment

Treatment for states of severe malnutrition is commonly performed in three stages.³ The first stage focuses on stabilization of the patients vitals, including temperature, blood sugar levels, electrolytes and fluid status. The second stage involves rehabilitation, which can be accomplished with ready-to-use therapeutic food in patients that have appropriate appetite, or via therapeutic milk formula known as F-75 in patients that do not have a proper appetite. The goal should be 150-200 kcals/kg.day. The last stage involves patient follow up that addresses the physical, mental and emotional requirements of the patient.

Dermatologic lesions should be treated with antibacterial solutions and covered with sterile dressing.

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