

Generalized Yellow Discoloration of the Skin

What's the diagnosis?



A 50-year-old man presented with yellow, pruritic, xerotic skin and lethargy. The patient also reported nasal congestion and sneezing, especially when eating peanuts. He was fearful of allergic reactions and restricted his diet to “safe foods” such as squash, green beans, and sweet potatoes. On examination the patient had marked generalized yellow discoloration of the skin with pale mucous membranes, non-icteric sclerae, infraocular violaceous and hyperpigmented skin (allergic shiners), and Dennie-Morgan folds.

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The Diagnosis: Carotenemia

Laboratory parameters including thyroid function testing as well as total protein and bilirubin levels were within reference range. Testing revealed multiple food allergies to almonds, oranges, cashews, garlic, peanuts, and cantaloupe. The patient was treated with a dietary expansion based on his allergy testing.

β -Carotene converts to vitamin A in the intestine and acts as a lipochrome. Lack of conversion can be noted as an inborn error of metabolism.¹ Many green, yellow, and orange fruits and vegetables contain β -carotene, including carrots, sweet potatoes, squash, green beans, papayas, and pumpkins.¹⁻³ β -Carotene also is used as a vitamin supplement⁴ or therapeutic agent in photosensitive disorders such as genetic porphyrias.⁵

β -Carotene can accumulate in the stratum corneum and impart a yellow color to the skin when the circulating levels are high; this coloration is termed *carotenemia*.^{1,4} Carotenemia is common in infants and young children who have diets rich in green and orange vegetable purees.⁶ Carotenemia limited to thick areas of the skin, such as the palms and soles, can be seen in adults who eat large amounts of carrots; generalized carotenemia is rare.^{1,4}

Carotenemia is a benign condition of excess cutaneous buildup of β -carotene through excessive intake of carotene-rich foods^{1,4} or nutritional supplements⁷ or through association with anorexia, liver disease, renal disease, hypothyroidism, or diabetes mellitus.^{1,4,8,9} Carotene deposits usually are most notable in areas with thick stratum corneum, such as the nasolabial folds, palms, and soles, as opposed to areas such as the conjunctivae and mucosa.^{1,4}

Carotenemia may mimic jaundice and should be differentiated through scleral examination for icterus

and bilirubin levels. Carotene levels can be tested but generally are unnecessary. Carotenemia can be seen in liver or renal disease and can exacerbate the yellow coloration seen in jaundiced individuals.^{1,4,9}

Because it is a benign condition, the pathology usually is limited to skin discoloration, as seen in our patient. Although this condition can be reversed with a modified diet, our patient had multiple food allergies that further restricted his vegetarian diet, thereby limiting the modifications that he was willing to make to his diet.

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