Another interesting point is the ratio of four males to one female having a duodenal ulcer. Numerous investigations have shown that the sex incidence shows a far greater percentage of duodenal ulcers occurring in the male than in the female, the average being in the region of 80% male.

Summary

A family is described in which duodenal ulcers occurred in several members. Five of the family—four brothers and one sister—had partial gastrectomies. Apart from a direct family relationship, no other common factor has been found which might be significant in the aetiology.

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Medical Memoranda

Carotenaemia Occurring in a Case of Anorexia Nervosa

Carotenaemia occurs when excessive amounts of carotene are ingested, in diabetes mellitus, in hyperlipaemic conditions, and in myxoedema; and Cohen (1958) described a "unique case" which he believed to be due to an inborn error of metabolism. Carotenaemia has not previously been reported to occur in anorexia nervosa, and the following case is described in order to draw attention to the possible association.

CASE HISTORY

An unmarried woman of 28 was seen in March, 1958, complaining of anorexia and amenorrhoea since the age of 16½. She had attended various hospitals in the past, with only temporary increase of weight each time. She weighed 7 stone (44.5 kg.) and was 5 ft. 6½ in. (169 cm.) tall.

On examination there was general emaciation, the breasts were small but developed, and the hair distribution was normal. There was no hypertrichosis. The skin was dry, thin, and inelastic, and acrocyanosis was pronounced. A faint yellow tinge of the skin was noticed, although the cyanosis made this less obvious than it would otherwise have been; it was especially marked over the palms and soles, which were bright orange, and to a less extent around the nose and in the axillary folds. The conjunctivae and mucous membranes were clear; the urine was a pale clear yellow and contained no urobilinogen or bile salts. Direct questioning revealed that she had first noticed the yellowness in February, since when it had fluctuated in intensity but never completely gone. The skin had not itched and she had not bothered about it. For the past 10 years she had eaten large amounts of fruit and cooked green vegetables (but never raw carrots), and there had been no recent change in this habit. She had been mildly constipated all her life, but took no aperients or liquid paraffin. Carotenaemia was diagnosed, and was confirmed by finding a serum carotene level of 240 µg./100 ml. (normal 50–120 µg.). The serum vitamin-A concentration, 182 I.U./100 ml. (normal 80–130), was also higher than normal.

There was no evidence of diabetes, a glucose-tolerance test was normal, and the blood cholesterol was 200 mg./100 ml. Clinically she was euthyroid. The B.M.R. was -1%, and the radioactive iodine uptake and excretion were within normal limits. Liver-function tests, plasma protein values, urine, and blood showed no abnormality. She was treated with strict bed rest, green vegetables were omitted from her high-calorie diet, and fresh fruit was restricted. The yellow pigmentation, although fluctuating, remained; and on discharge, after eight weeks as an in-patient, she weighed 8½ stone (54 kg.), the serum carotene was 180 µg./100 ml., and the vitamin A concentration 140 I.U./100 ml.

COMMENT

Carotene is present in variable amounts in many plant materials and in butter and egg yolk (Harris, 1955). It cannot be synthesized by animals and is utilized by them in the formation of vitamin A. This conversion occurs mainly in the intestinal mucosa and to a less extent in the liver, and in some species there is evidence that the absorption of carotene varies directly with thyroid activity (Wright, 1952). Cohen (1958) states that 4–8 lb. (1.8–3.6 kg.) of raw carrots must be eaten daily for some months before carotenaemia appears clinically and that the pigmentation disappears in two to six weeks when the diet is corrected. It seems unlikely, therefore, that the carotenaemia in this case is due to excessive intake, especially in view of the fact that her dietary habits have not altered recently. Pigmentation, as in other states of cachexia, has been described in anorexia nervosa (Berkman, 1930), but this is a brownish colour and obviously very different from the colour and distribution of carotenaemia. Yellow pigmentation of the nails was described in starving Dutch patients in 1944–5 (*Malnutrition and Starvation in Western Netherlands*, 1948), but the skin was said to be sallow, with dun-brown pigmentation. Metabolism is often depressed in anorexia nervosa, although it was not in this patient, but myxoedema does not occur and the serum cholesterol is usually normal.

Cohen described a case of carotenaemia, for which no cause could be found, in a woman of 38 who had had a yellow tinge to her skin for several years, most pronounced on the palms and soles but also affecting the lips and buccal mucosa. In this case the serum carotene was raised and there was vitamin-A deficiency. In addition the patient had lost weight. The case reported here differs in that the serum vitamin-A concentration is high. But large amounts of vitamin A, sufficient for at least six months' deprivation, are normally stored in the liver, and since the carotenaemia in this case is of only three months' duration, while Cohen's patient had had carotenaemia for several years, this may explain the difference. Alternatively, the abnormality may involve a different process. In any case, the possibility that this abnormality is associated with weight loss is interesting, and seems worthy of further investigation.

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