Short reports

Xanthoderma: an unusual presentation of hypothyroidism

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Abstract

A young woman presented with progressive yellowing of her skin over a period of six months. Liver function tests were requested by her general practitioner and the results prompted the Chemical Pathology Department to instigate further tests to reach the final diagnosis. Hypercarotenaemia had caused her yellow skin, and various other biochemical abnormalities pointed towards primary hypothyroidism as an underlying cause. Thyroxine replacement treatment successfully corrected all the biochemical abnormalities including hypercarotenaemia. As far as is known, yellow skin as a sole presenting feature of hypothyroidism is extremely rare.

(*J Clin Pathol* 1994;47:850-851)

Yellow skin is usually thought of as a sign of hyperbilirubinaemia. However, the possibility of hypercarotenaemia and its underlying causes, though less common, should not be ignored, especially if the serum bilirubin concentration proves normal.

Case report

A 27 year old fair-skinned woman consulted her general practitioner because of progressive yellowing of her skin over the preceding six months. No other associated symptoms were declared at this stage and the clinical examination was unremarkable apart from the fact that her skin but not her sclerae had a yellow tinge. A blood sample was obtained from the patient and sent to the Chemical Pathology Department for liver function tests, the quoted clinical details being "yellowing of skin". The biochemical results and associated reference ranges were: bilirubin 7 $\mu\text{mol/l}$ (normal range 3-20); aspartate aminotrans-

ferase 47 IU/l (normal range 12-40); alkaline phosphatase 15 IU/l (normal range 30-95); total protein 75 g/l (normal range 61-79); and albumin 50 g/l (normal range 37-50).

Clearly the patient's yellow skin was not caused by jaundice, but she did have a slightly raised aspartate aminotransferase activity and low alkaline phosphatase activities. In an attempt to link these biochemical abnormalities with the clinical presentation it was thought that the yellow skin was due to hypercarotenaemia secondary to hypothyroidism (in view of the low alkaline phosphatase and slightly increased aspartate aminotransferase value, known biochemical abnormalities in myxoedema). Therefore, further biochemical tests were performed on the same blood sample: β -carotene was 10.1 $\mu\text{mol/l}$ (normal range 0.9-5.6); creatine kinase 833 IU/l (normal range 32-165); sodium 124 mmol/l (normal range 135-146); and total cholesterol 8.9 mmol/l (desirable concentration <5.2). All these abnormal findings are known to occur in hypothyroidism. Thyroid function testing revealed primary hypothyroidism with a total thyroxine of < 20 nmol/l (normal range 70-140) and thyroid stimulating hormone of 302 mU/l (normal range 0.3-3.8). The general practitioner was advised to start thyroxine replacement treatment and after seven weeks the patient was stabilised on 150 μg thyroxine daily with tremendous clinical and biochemical improvement (table). In retrospect the patient did admit having menstrual irregularities (menorrhagia followed by oligomenorrhoea), severe constipation, lethargy and lack of energy for the preceding 18 months but she had never complained about these symptoms to her doctor.

Comments

The clinical features of myxoedema are non-specific and protean. To a certain degree the

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Accepted for publication
28 February 1994

Biochemical variables measured in the patient's serum before and after thyroxine replacement

	β carotene (0.9-5.6 $\mu\text{mol/l}$)	AST (12-40 IU/l)	CK (32-165 IU/l)	ALP (30-95 IU/l)	Sodium (135-146 mmol/l)	Cholesterol (< 5.2 mmol/l)	TT4 (70-140 nmol/l)	TSH (0.3-3.8 mU/l)
Before treatment	10.1	47	833	15	124	8.9	<20	302
After treatment	4.1	17	69	26	141	3.8	141	0.4

AST: Aspartate aminotransferase; CK: creatine kinase; ALP: alkaline phosphatase; TT4: total thyroxine; TSH: thyroid stimulating hormone.

presenting symptom is a matter of choice for the patient, as this case illustrates. Of the multiple symptoms she had, yellow skin was chosen as the presenting feature. Although the general practitioner realised that the yellow tinge of her skin sparing the sclerae was probably not jaundice, he did request liver function tests to exclude this condition. The chemical pathology staff were alert enough to recognise the possibility of hypercarotenaemia and underlying hypothyroidism and to instigate the necessary tests to prove it.

It is acknowledged that hypothyroidism confers a yellow tint to the skin in many patients, especially if the palms and soles are examined.¹ However, we feel that yellowing of the whole body skin as a sole presenting feature of hypothyroidism must be extremely rare as other signs and symptoms usually dominate the clinical picture. In this case the patient did admit having symptoms suggestive of thyroid hormone deficiency for 18 months, a duration long enough perhaps to increase the chance of development of hypercarotenaemia to such a degree.

It has long been noted that sera from cases of myxoedema and cretinism are characteristically of a deeper orange-yellow colour than normal due to increased concentration of the carotenoid pigments that are carried by specific lipoproteins.^{1,2} Furthermore, administration of β -carotene to hypothyroid patients results in a sharp increase and delayed clearance of its plasma concentration compared with normal subjects.³ The hypercarotenaemia of myxoedema is thought to be due to

reduced conversion of carotenoids to retinol, and it has been suggested that vitamin A deficiency may ensue as a result, causing the dry scaly skin typical of hypothyroid patients.⁴ The concentration of plasma carotene is greatly influenced by dietary intake but our patient denied excessive consumption of carotene-rich foods. High concentrations are also found in hyperlipidaemia associated with diabetes mellitus and chronic renal failure.⁵

This patient represents an excellent case example from the chemical pathology point of view, as she displayed all the biochemical abnormalities describable in hypothyroidism, which were successfully corrected by thyroxine replacement. The main message from this case is that the patient whose yellow skin is not due to jaundice is worth investigating for hypercarotenaemia and possible hypothyroidism.

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J Clin Pathol 1994;47:851-852

Paget's disease of the breast in a man without underlying breast carcinoma

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Accepted for publication
24 March 1994

Abstract

A case of histologically confirmed Paget's disease of the breast in a 72 year old man, without underlying breast carcinoma, is reported. This report raises questions about the pathogenesis of this condition and suggests that Paget's disease is an independent, intraepidermal carcinoma rather than a direct extension of intraductal carcinoma of the breast to the nipple and areola.

(*J Clin Pathol* 1994;47:851-852)

About 1% of all breast carcinomas occur in men,^{1,2} and 1-5% of all cases of breast carcinoma

present as Paget's disease.³ Paget's disease of the male breast is therefore exceptionally rare. About 55 cases of Paget's disease of the male breast have been reported to date. All of these were associated with an underlying breast carcinoma. However, published reviews of the condition by Serour,⁴ Crichlow and Czernobilsky,² and Satiani⁵ rejected many of these cases because of a lack of histopathological evidence.

Paget's disease without an underlying breast carcinoma has been reported before,^{3,6} although not in men. We report a case of histologically confirmed Paget's disease of the breast occurring in a 72 year old Irish man in whom there was no associated breast carcinoma.