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Alopecia of myxedema: Clinical response to levothyroxine sodium

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Noncicatricial alopecia resulting from myxedema developed in a 58-year-old woman. We report the response of her alopecia to treatment with levothyroxine sodium and review the literature on the subject. (*J AM ACAD DERMATOL* 1991;25:902-4.)

Diffuse, nonscarring alopecia is one of the many cutaneous manifestations of myxedema. The course is one of slow progression. Treatment with thyroid hormone replacement usually leads to regrowth of hair. We recently observed hair regrowth in 24 weeks in a patient with myxedema.

CASE REPORT

A 58-year-old Portuguese woman had progressive alopecia for 4 years. It had become especially prominent during the last 18 months and prompted her to seek medical consultation. On further questioning she admitted to fatigue; cold intolerance; watery, swollen eyes; and dry skin. Her children commented that her voice had changed and was now harsh and gravelly. The patient denied previous illnesses, operations, or x-ray therapy. She had not been taking any medications and denied any family history of alopecia.

From the Department of Dermatology, Pontiac Osteopathic Hospital. Color photography and reprints were made possible by a grant from Boots-Fiint, Inc.

Presented at Massachusetts General Hospital, Dermatology Grand Rounds, Nov 7, 1989.

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Physical examination revealed an obese white woman who appeared older than her stated age. Her gait was slow and deliberate. Her body movements were sluggish, and her voice sounded harsh. Her facial expressions were diminished. Marked alopecia was seen in the frontal, parietal, and occipital scalp areas (Fig. 1). Hair follicles were readily apparent throughout the entire scalp. Her remaining hair appeared dull and dry. No "exclamation mark" hairs were seen. Alopecia of the lateral areas of the eyebrows was present. The eyelids were puffy and erythematous, and the eyes appeared watery. The thyroid was slightly enlarged to palpation. The skin appeared pale yellow and was diffusely dry, scaly, cool, and doughy in texture. Generalized nonpitting edema was present and was especially prominent in the forearms and legs. Examination of deep tendon reflexes revealed prolongation of the relaxation phase.

Laboratory studies revealed an elevated thyroid-stimulating hormone level of (115 IU/L). Total T₄ was depressed (11.7 nmol/L), as was T₃ (0.9 nmol/L). T₃ uptake was 25%. Free T₄ index was decreased (0.2). Antibodies to thyroid microsome (1:1600) were present and to thyroglobulin (1:10). Serum cholesterol level was elevated (412 mg/dl).

Treatment with levothyroxine sodium (Synthroid), 0.025 mg daily, was begun. After several weeks the dosage was increased to 0.05 mg daily, and this dosage was maintained. Four weeks after treatment was begun there

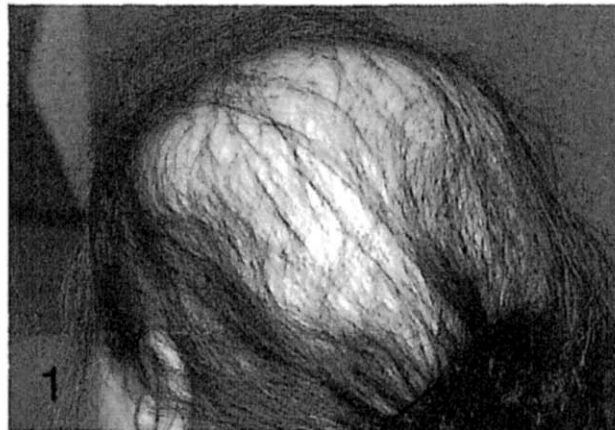


Fig. 1. Diffuse, nonscarring alopecia of scalp before initiation of thyroid hormone replacement therapy.

Fig. 2. Week 18. Note dense regrowth of hair.

Fig. 3. Week 24. Additional dense regrowth is seen.

was no clinical improvement. At week 8 fine regrowth of hair was seen on the scalp. The patient seemed sharper mentally, walked briskly and energetically, and her voice sounded less harsh. The deep tendon reflexes were normal, but her skin remained unchanged. She did not return until week 18. At this time dense hair regrowth was seen on the scalp (Fig. 2). The patient's face appeared less edematous, and her thyroid gland was nonpalpable. At week 24 further dense hair regrowth was seen in the temporal and occipital areas (Fig. 3). The growth in the vertex appeared less dense than in the remaining scalp. Moderate regrowth was also seen in the lateral areas of the eyebrows. The patient's skin was now smooth, soft, and warm.

DISCUSSION

This patient illustrates the gradual response of myxedema-induced alopecia to levothyroxine replacement therapy. The hair follicle is responsive to a number of hormones, including testicular, ovarian, and adrenocortical androgens as well as estrogen and thyroxine.^{1,2} Therefore it is not surprising that a deficiency of thyroid hormone leads to hair loss.

It is generally agreed that hair regrowth usually occurs after hypothyroidism is controlled, but it may be incomplete.² Hair loss is reversible after the euthyroid state is achieved unless the disease is severe enough to cause follicular atrophy.³ Generally the

Table I. Mucocutaneous manifestations of myxedema

Skin	Oral	Hair	Nails
Dryness	Macroglossia	Noncicatricial alopecia	Striations
Coarseness	Pallor of lips	Madarosis	Thinning
Coolness		Coarseness	
Nonpitting edema		Dryness	
Pallor		Brittleness	
Yellow tint			
Decreased sweating			

hair changes in myxedema do not disappear until several months after initiation of treatment.⁴

Alopecia is common in patients with hypothyroidism. In one study 57% of myxedema patients experienced loss of hair.⁴ Saito et al.⁵ reported alopecia in 48.9% of their patients with hypothyroidism. In a study of 400 patients, with myxedema, Wantanakunakorn et al.⁶ found the incidence of alopecia to be 32%. Diffuse alopecia may be the only sign of hypothyroidism.⁷

Alopecia of the lateral areas of the eyebrows also occurs in myxedema and may be a useful diagnostic sign.⁸ Freinkel and Freinkel⁹ reported that the alopecia in hypothyroidism results from a prolonged telogen phase. Normal telogen-anagen ratios are restored with replacement of thyroid hormone.

The only sign that concerned our patient was hair loss, which caused her to seek medical advice. The vertex hair regrowth was less dense than hair regrowth on the remainder of her scalp; this may be due to concomitant female-pattern alopecia. Because of the similarity of appearance between myxedema-induced alopecia and female-pattern alopecia, clinicians may consider obtaining thyroid function tests in women with severe androgenetic alopecia, as has been suggested previously by Baden.¹⁰

The diverse mucocutaneous manifestations of myxedema appear in Table I.

ADDENDUM

One year after initiation of thyroid hormone replacement, the patient's thyroid function test results were normal. Serum cholesterol decreased (298 mg/dl). A maintenance dosage of levothyroxine sodium (0.15 mg daily) has been prescribed. (E. J. Troncoso, MD: Personal communication, Nov. 20, 1990).

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