A study of the cutaneous manifestations of hypothyroidism and hyperthyroidism

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Abstract

Background: Endocrinologic disorders occasionally present with cutaneous manifestations.1 Thyroid hormonal abnormalities are frequently associated with abnormalities of the skin, hair and nails.

Aim: To study the cutaneous manifestations of hypothyroidism and hyperthyroidism in a tertiary care centre in Kerala. Methods: Diagnosed cases of thyroid diseases which attended the Thyroid Clinic, of Medical College Hospital, Thiruvananthapuram, during the period of March 2004 to February 2005 were included in the study.

Results: Cutaneous changes were seen in 54 out of 100 (54%) patients in the study group. 27% of men (n=22) and 61.54% of women (n=78) had skin, hair or nail changes. The common cutaneous changes seen in hypothyroid patients (n=64) were – palmoplantar keratoderma (54.7%), madarosis (25%), myxoedematous changes (25%) and fragile skin (21.9%) and in hyperthyroid patients (n=36) were – warm skin (88.9%), moist skin (86.1%) and generalised pruritus (22.2%).

Conclusion: Patients with hypothyroidism most commonly present with palmoplantar keratoderma and diffuse hair loss as the skin and hair manifestations and those with hyperthyroidism with warm and moist skin, sparse hair and diffuse hair loss.

Keywords: Hypothyroidism, Hyperthyroidism, Palmoplantar keratoderma.

Introduction

The relationship of the thyroid gland to the skin is complex. All cutaneous manifestations of thyroid disease cannot be directly attributed to alterations of the thyroid hormones alone; pituitary thyrotrophic hormones also have a direct effect.2

Thyroid hormones have been shown to be necessary for the initiation and maintenance of hair growth as well as for normal secretion of sebum3. The production of collagen and mucopolysaccharide by dermal fibroblasts is also influenced by thyroid hormones which is more marked in hypothyroidism. The effect of thyroid hormones on pigmentation of the skin is not clear; both hyper and hypopigmentation are seen in the hyperthyroid state.2

The present study is undertaken to evaluate the cutaneous manifestations of hypothyroid and hyperthyroid states.

Methods

Hundred diagnosed cases of thyroid diseases who attended the Thyroid Clinic of Medical College Hospital, Thiruvananthapuram, during the period of March 2004 to February 2005 were included in the study. After enrolling into the study, patients’ socio-
demographic details and clinical history were collected, following which general examination, examination of thyroid gland, dermatological examination and systemic examination were done in every case. A specific diagnosis of thyroid disease was made based on hormonal study (Thyroid function tests) of individual subjects. A semi-structured interview schedule was used to collect the information from the subjects.

Results

Of the hundred subjects included in the study, sixty four (64%) were hypothyroid and thirty six (36%) were hyperthyroid. A female predominance was seen in both groups with a male to female ratio of 1:4.2 in hypothyroidism and 1:2.27 in hyperthyroidism. Thyroid enlargement was present in 68 patients (n=100), out of which 72.2% were hyperthyroid (n= 36) and 65.6% were hypothyroid (n= 64) (Table 1).

Cutaneous changes were seen in 54% patients in the study group (n=100). The common cutaneous changes seen in hypothyroid patients (n=64) were – palmoplantar keratoderma 54.7% (picture1), madarosis 25%, myxoedematous changes 25% and fragile skin 21.9%. (Table 2).

The common cutaneous changes seen in hyperthyroid patients (n=36) were – warm skin 88.9%, moist skin 86.1% and generalized pruritis 22.2%.

In hypothyroidism (n=64) diffuse hair loss was seen in 59.4 %, sparse hair in 45.3% and fine hair in 40.6% and in hyperthyroidism (n=36) diffuse hair loss was seen in 50% , sparse hair in 52.8% and fine hair in 36.1 % (Table 3).

Among the hyperthyroid cases (n=36) 13.9% had fast growing nails and 5.6% had brittle nails .3.1% of the hypothyroid cases (n=64) had brittle nails (Table 4).

The prevalence of vitiligo in the study group was 4%(n= 100), out of which 3 were hypothyroid and 1 hyperthyroid. Thyroid ophthalmopathy was seen in 9 out of the 100 patients and all of them were hyperthyroid. Pretibial myxoedema and thyroid acropachy were not seen in any of the patients in our study group.

The thyroid function test results also showed the typical values of hyperthyroidism and hypothyroidism (Table 5).

Discussion

The total number of patients included in this study was hundred, which included sixty-four patients (64%) with hypothyroidism and thirty-six patients (36%) with hyperthyroidism.

In our study the maximum cases of hypothyroidism were in the age group 30-39 years (22 out of 64 i.e., 34.4%) and also the maximum number of females with hypothyroidism were in this same age group, in contrast to the earlier studies which showed that middle aged women (40-60 years) were more commonly affected. \(^4\) Peak age of onset of cases of hyperthyroidism in our study was between 30-39 years (14 out of 36 cases i.e.,38.9%) as against the earlier studies which showed the peak age of onset of hyperthyroidism to be between 20–30 years. \(^4\)\(^5\)

Among the hypothyroid patients(n=64), females were more with a male to female ratio of 1:4.2 (11 males and 53 females), in accordance with earlier studies. Of the 36 hyperthyroid cases, 11 were males and 25 females (1:2.27), as against the previous studies which showed a ratio of 1:7. \(^4\)

In our study cutaneous changes were seen in 27% of men and 61.54% of women, in contrast to the studies of Veranna SK et al, who recorded cutaneous changes only in 5% of men and 15% of women with thyroid dysfunction. \(^6\) Palmoplantar keratoderma (PPK), a common feature of hypothyroidism was seen in 35 out of 64 cases (54.7%) of hypothyroidism.
In hyperthyroidism (n=36) diffuse hair loss was seen in 50%, sparse hair in 52.8% and fine hair in 36.1% almost in accordance with other observations which showed fine hair with diffuse alopecia in about a third of patients. 

Vitiligo was seen in 4% (4 out of 100) of the study population, out of which 3 were hypothyroid (3 out of 64 cases - 4.7%) and 1 (1 out of 36 cases - 2.8%) was hyperthyroid, in contrast to earlier studies which showed a prevalence of vitiligo in up to 7% of hyperthyroid cases. The prevalence of vitiligo in the general population is 1.84%, and in this study it is 4%. The 95% confidence interval for the proportion of vitiligo patients in our study ranges between 0.16% – 7.84% and so this difference is not statistically significant. In the present study generalized hyperpigmentation was seen in 3 out of 36 cases (8.3%) of hyperthyroidism, as against 2% of patients in an earlier study. This generalized hyperpigmentation is due to increased ACTH secretion in hyperthyroidism.

In our study Graves’ ophthalmopathy was seen in 9 out of 36 hyperthyroid cases (25%), in contrast to other studies which showed a prevalence of 30-45%.

We could find no cases of pretibial myxoedema, ophthalmopathy and acropachy in a male patient with Graves’s disease.Indian J Dermatol Venereol Leprol. 2004; 70: 380-2.

References