

The prevalence of skin manifestations in thyrotoxicosis - A retrospective study

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Summary

The presenting features of 236 thyrotoxic patients seen in the thyroid clinic were reviewed. 18.65% of these patients had one or more dermatological complaints at presentation. There was no specific difference in this group of patients when compared with the general hyperthyroid population with regard to age, race, sex, duration of hyperthyroidism or biochemical indices of thyrotoxicosis.

The two major complaints were itching and alopecia. The prevalence of pruritus at 6.4% in our series was identical to that of other workers, but we had a much lower occurrence of alopecia at 2.6%. The diagnosis of thyrotoxicosis was delayed in two patients in whom the only major complaint was pruritus. These symptoms cleared quickly when these patients became euthyroid. However there were other patients who noted hair loss with anti-thyroid medications.

The incidence of vitiligo, eczema, onycholysis in our series was much lower than those quoted in the Western literature. The occurrence of pretibial myxoedema in our series is similar to that of other workers from this region. The other miscellaneous manifestations include urticaria, xanthelasma and systemic lupus erythematosus. In conclusion we feel the cutaneous manifestations of hyperthyroidism are common in our patients.

Key words: Thyrotoxicosis, skin manifestations, retrospective study

Introduction

Thyrotoxicosis is well known for its protean manifestations. The skin manifestations are many. But they are little emphasised or stressed in standard textbooks.^{1,2} Some of these cutaneous features are common and are probably caused by excessive thyroxine. Others are rare but interesting and possibly may be related to the aetiology of Graves' disease.^{3,4} The purpose of this paper is to relate our experience with the dermatological manifestations of hyperthyroidism. This is mainly to stress that cutaneous features of this disorder are not uncommon in the local setting.

Patients and Methods

We reviewed the clinical notes of 236 patients with thyrotoxicosis registered with the Thyroid Clinic of the Medical Department at the Melaka General Hospital. 72% of these patients were females. The dermatological manifestations seen only at presentation were included. Those who had cutaneous features while on therapy were excluded from the study.

Results

44 or 18.75% of the 236 patients had one or more cutaneous manifestations at presentation. The various skin manifestations seen in these patients are shown in Table 1. It is to be noted there was no specific difference in this group of patients when compared to the general hyperthyroid population with regard to age, race, sex, duration of thyrotoxicosis or biochemical indices of hyperthyroidism.

Table 1
Distribution of cutaneous manifestations of thyrotoxicosis

Symptom/sign	Number of patients
Pruritus	15
Palmar erythema	11
Alopecia	6
Vitiligo	5
Rash	7
Onycholysis	2
Xanthelasma	2
Pretibial myxoedema	3
Acropachy	1
Urticaria	1
S.L.E.	1
Eczema	3

Discussion

Our study shows the various skin manifestations of thyrotoxicosis. Some like pruritus are common. Others like urticaria are rare. While excess thyroxine may explain some of these features, others may possibly be related to the aetiology of Graves' disease.

Palmar Erythema: Palmar erythema was seen in 11 of our patients. This is due to the vasodilatation caused by excess of thyroxine hormone. The incidence of palmar erythema in our series at 4.7% is rather low. This is mainly because patients do not complain of it leading to underrecognition on our part. The presence of palmar erythema is useful in situations where the clinical diagnosis of thyrotoxicosis is otherwise equivocal. It tends to tilt the diagnosis in favour of hyperthyroidism.

Pruritus: The prevalence of pruritus at 6.75% in our series reflects those of other workers.⁵ Thyrotoxicosis as a cause of pruritus had been recognized as early as 1904 by Sir William Osler when he stated "occasionally pruritus is an early and most distressing symptom and I have seen one case in which it persisted and became almost unbearable".⁵ However this was not

subsequently stressed in textbooks and reviews which led Elaikin and Rachmilewitz to call it a "neglected symptom in thyrotoxicosis"⁶

The diagnosis of thyrotoxicosis was not difficult in 13 of our patients who complained of itching amidst other features of the disorder. But, the diagnosis was delayed in two patients in whom the primary manifestation of hyperthyroidism was pruritus. The exact cause of pruritus in thyrotoxicosis is not known. It is postulated that the vasodilatation, potentiation of epinephrine and release of bradykinin by excess of thyroxine may be involved in the lowering of itch threshold resulting in pruritus.⁵ It is to be noted that pruritus was relieved in all our 15 patients when they became euthyroid with treatment. This has been the experience of other workers too.^{5,8}

Hair changes: Only six of our patients were distressed by alopecia areata. The prevalence of alopecia areata at 2.6% in our series is much lower than the 6% incidence reported by others.⁹ But it has been recognised that the documentation of hair loss is fraught with a number of difficulties including the fact some patients are not embarrassed by it. In some of our patients the alopecia responded to treatment while in others further hair loss was arrested by antithyroid medications. On the other hand, some patients in our series experienced diffuse hair loss while on antithyroid medications. This has been observed by others too.⁴

Vitiligo. Vitiligo was seen in four of our patients. This was much lower than the 7% incidence seen in Western patients.¹⁰ The reason for this is not clear. Moreover we were not aware of the experience of other workers from this region. In all our patients, vitiligo preceded hyperthyroidism by several years.

Onycholysis: Onycholysis (Plummer's nails) was seen in three of our patients. In fact one of them noticed the nail changes herself and described them as "funny looking nails".

Plummer from the Mayo clinic has been credited with the recognition of the nail changes in thyrotoxicosis in 1937.¹¹ The nails grow fast and are shiny in hyperthyroidism.³ This results in the separation of the terminal central part of the nail from the bed. This creates an additional free space beneath the nail in which debris may collect.¹² Classically these changes are first seen in the fourth finger¹² and later spread to the other fingers as well as the nails in extreme cases. Occasionally it may lead to loss of nails.⁴ The exact pathogenesis of onycholysis in thyrotoxicosis is not known except that it denotes long-standing hyperthyroidism.¹³ Interestingly it has also been observed in hypothyroidism occasionally.³ The onycholysis in our patients regressed completely on their return to euthyroid status with treatment, reflecting the experience of other workers.¹²

Pretibial myxoedema: The importance of pretibial myxoedema appears to have been overemphasised in textbooks, colour atlases and examinations! It is rare in clinical practice. It was seen in three of our patients giving a prevalence rate of 1.3%. Its frequency in our series is close to the Singapore experience of 0.7%¹³ than the 5%¹⁴ incidence reported by Western workers. The temporal relationship between thyrotoxicosis and the appearance of pretibial myxoedema is variable.¹³ It may precede, occur concomitantly with or follow several years after the patient has become euthyroid.³ In two of our patients it appeared while on treatment.

The third patient developed it about six months after she became euthyroid. In two of our patients it was nodular in nature while the third patient developed the elephantiasis variety in which there was extensive brawny oedema with nodule formation. It cropped up over the anterior

lower legs in our patients. But, perhaps the term, pretibial myxoedema is a misnomer, as the lesion can occur elsewhere too including the face and neck.¹³ As noted by others^{3,14} all our three patients with pretibial myxoedema had bilateral exophthalmos.

The treatment of underlying thyrotoxicosis had no effect on the pretibial myxoedema in our patients. The natural history of thyroid dermopathy is not certain although it is claimed that it might improve spontaneously in certain cases.³ Various forms of therapy including intralesional steroids,¹⁶ topical steroids under occlusive dressing,¹⁷ skin grafting¹⁷ and plasmapheresis¹⁸ have been tried. But the response to these different therapeutic modalities have been variable. There appears to be no satisfactory or effective treatment at the moment.

Thyroid acropachy is a triad of pretibial myxoedema, exophthalmos and clubbing of fingers and toes. This was seen in one patient in the present study. This patient who had pretibial myxoedema and exophthalmos earlier, developed clubbing about a year after he became euthyroid following I¹³¹ therapy. Thyroid acropachy is rare. It occurs in less than 1% of patients with Graves' disease.⁴ In fact Kinsella and Beck found only 37 case reports in the English literature to 1968.¹⁹ Thyroid acropachy almost always occurs after the patient has become euthyroid. Clubbing has appeared as late as 28 years after the onset of hyperthyroidism.^{3,11} Thus unless these patients are followed up for a considerable period of time, thyroid acropachy may go unrecognised.

Urticaria: This is an extremely rare⁸ but an interesting feature of hyperthyroidism. This phenomenon was seen in one patient in the present study. This was a 35-year old Chinese male with a two year history of hives which did not respond to repeated courses of local steroid applications and antihistamines. On examination he had generalised urticaria and dermatographism could easily be demonstrated. He was also clinically thyrotoxic with marked thyroid bruit. The urticaria regressed rapidly as he became euthyroid following I¹³¹ therapy. The exact mechanism of urticaria in thyrotoxicosis is however not known.

Eczema: Eczema is said to occur in nearly a third of thyrotoxic patients.⁴ But it was present in only three patients in the present study. The reason for this low prevalence is not clear.

Xanthelasma: This was seen in two patients in our series. It is perhaps an incidental finding as the lipid profile in these patients was normal. Moreover the treatment of thyrotoxicosis had no effect on the size of the xanthelasmatus deposits.

Systemic lupus erythematosus (SLE): There was one patient in the present study who initially had thyrotoxicosis. She responded to a course of Carbimazole. Two years later, while being euthyroid, developed features of SLE in the form of alopecia, joint pain, facial rash and marked proteinuria. SLE was confirmed by serological studies. She is presently doing well on steroids. The association between SLE and thyrotoxicosis had been noted by others earlier.^{20,21}

Conclusion

- 1) Skin manifestations of thyrotoxicosis are common.
- 2) Skin changes may precede, coincide or follow other clinical and laboratory evidence of thyrotoxicosis. Thus the skin aids in the diagnosis of hyperthyroidism.
- 3) Occasionally, the skin manifestation may be the primary or sole presentation of thyrotoxicosis. Thus the need to consider hyperthyroidism in an otherwise unexplained case of pruritus or urticaria is stressed.

- 4) Some of these features like pruritus and urticaria do not respond to symptomatic treatment. But they regress rapidly with the control of underlying hyperthyroidism, bringing satisfaction both to the patient and her physician.

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