



THYROIDISM EFFECT ON ALOPECIA PATIENTS IN PAKISTAN

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Case Study

ABSTRACT

TSH is a hormone that is secreted by the anterior lobe of the pituitary gland and stimulates the secretions of the thyroid gland. Its secretions are controlled by the TSH-R on the epithelial cells of the thyroid gland. It controls the production of the thyroxin hormone from the thyroid gland that is involved in the production of heat and energy. But the excessive amount of this hormone leads to the hair fall in some of the peoples. Hyperthyroidism correlates with the human skin and hair structure and its function. In the case of hyperthyroidism hair bulb cell proliferation increases and hence hair fall rate also increases. While in the case of hypothyroidism the bulb cell proliferation reduces and so, hair fall increases. Samples from different regions of the south Punjab were taken that were analyzed by the special chemistry analyzer (minividas). The concentrations of the T4, T3, and TSH were measured. Some of the alopecia patients were recorded high-level TSH. The patients were treated with thyroxin tablets that reduce TSH level. After that, the patients are also treated with hair fin tab, folli one shampoo, wistin tab, and multivitamins. Now the patients were observed with a microscope. The growth of hair follicles and hairs was recorded. Hence, the thyroxin tab uses to decrease the TSH level in the body for 1 month. Hair fin tab, folli one shampoo, wistin tab, and multivitamins are the best treatment methods for the growth of hairs in alopecia patients.

Keywords: TSH (thyroid stimulating hormone); TSH-R (thyroid stimulating hormone receptor); FSH (follicle stimulating hormone); LH (Luteinizing hormone).

1. INTRODUCTION

Thyroid abnormalities such as hypothyroidism and hyperthyroidism are associated with hyperpigmentation and hair structure and its function. A higher telogen rate changes the diameter, dryness, brittle, coarse hair, and reduction in hair bulb cell proliferation and ultimately hair loss in

hypothyroidism [1]. While, in the case of hyperthyroidism, there is increased hair bulb cell proliferation and hair loss. However, the exact mechanism is entirely unknown whether changes in the thyroid hormones levels are involved which directly affect the thyroid hormone receptors that expressing human scalp is associated with hair abnormalities, the hypothalamic-pituitary-thyroid axis

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is also associated with hair loss [2]. Hypothyroidism is the situation in which the hormone from the pituitary gland known as TSH is released from its anterior lobe that stimulates the production of the thyroid gland hormones in excessive amount [3]. These hormones include T4, T3, and calcitonin. The functions of these hormones to produce heat, energy and calcium regulation in the body. The synthesis of the thyroid hormones is controlled by the (TSH-R) expressed on thyroid epithelial cells. The condition of hypothyroidism may lead to the reduction of the hair follicles [4]. The reduction in hair follicles leads to the loss of hairs. In mammalian body the hormone sensitive tissue system present in hair follicle. Numerous endocrine abnormalities are associated with alopecia and unwanted body hair growth. Body hair growth due to the high level of testosterone hormone, FSH and LH [5]. Hair loss in both male and female is called androgenic alopecia. The cause of this alopecia is the testosterone. Due to testosterone alterations hair follicles shrinks and that results in hair loss. As men have more testosterone level than women so alopecia or balding is more common in men [6].

Cognate receptors expressed on the thyroid epithelial cells are activated by thyroid stimulating hormone [7]. However, some evidence proves there are extrathyroidal target cells for the TSH stimulation also including adipose tissue. Moreover, it has been reported that HF human keratinocytes and human papilla fibroblast cultured invitro and express the functional protein TSH-R mRNA and also human skin fibroblast also express this protein [8]. The Human scalp HFs and human skin express functional mediated signaling of TSH-R. Mostly females perform facelift surgery due to excess scalp on their skin and the human HF organ culture assays are selected for the study of integument region due to clinical importance of the scalp hair follicle [9].

2. MATERIALS AND METHODS

The blood sample was collected by the Multan region. There were totally 82 patients that belong to different areas of Multan region. The patient’s form which the sample was collected were affected with hair follicles problems. Some of the patients were affected with alopecia. The alopecia is the condition in which patients have no hairs. The blood sample was put into gel vials and the vials were centrifuged at 3000rpm for ten minutes. After that serum was extracted from all the collected blood samples individually. After that T3, T4 and TSH tests were performed at special

chemistry analyzer (minividas). The hair bulbs were examined with help of microscope. Some drugs were used for clinical trial for their hair.

3. RESULTS

The blood sample of 82 patients belong to different areas of southern Punjab were used in molecular detection of thyroid function test, the mean age of patients was 49.0 ± 8.1.

The age was categorized into 4 groups, 10-20, 20-40, 41-60 and above 61 age formed 1st, 2nd, 3rd and 4th group. Number of patients in age groups 10-20, 20-40, 41-60 and above 61 were, 07, 47, 23 and 5, respectively. The no of patient was found in order of 47 > 23 > 07 > 05 in 2nd, 3rd, 1st, and 4th age groups, respectively. The highest number of hypothyroidism patient (47) were found in 2nd group while the lowest patients (05) were found in the 4th group.

Table 1. Minimum and maximum age of thyroidism patients collected from different areas of southern Punjab

Sr. No	Patient data	Patient age
1	Minimum age	20
2	Maximum Age	78
	Mean ±S.E	49.0 ± 8.1

Table 2. Distribution of thyroidism patients by age group

Age group	Number of patients
10-20	7
21 - 40	47
41-60	23
ABOVE 61	5
TOTAL	82

The maximum no of patients were observed in age 30 and 40, minimum no. of patients were found in both age 63 and 15. The results of paired t-test was showed that the signification (P<0.05) (0.02) correlation was observed in age group.

The chart shows that observed patient are mostly hyperthyroidism >subclinical hypothyroidism> hypothyroidism=euthyroidism. In hyperthyroidism TSH level increases, T3 and T4 was decreased to their normal ranges and the follicle of these patient were reduced. These patients were treated with hair fin tab, folli one shampoo, wistin tablets and multivitamins for their better growth.

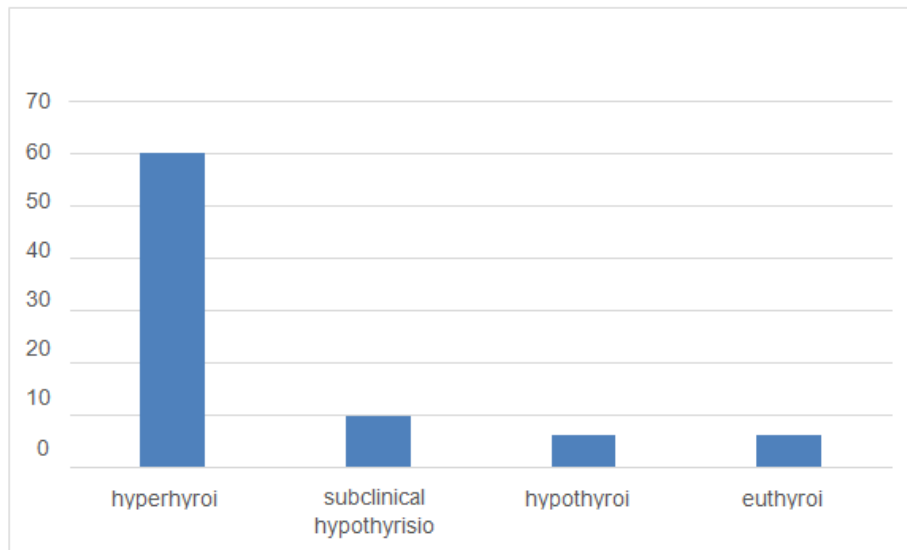


Fig. 1. Chart Showing the different state of the effect of thyroidism

4. DISCUSSION

The patients in which level of TSH hormone is increased from the normal range have weak hair follicles. It means there is a great influence of TSH hormone on the growth of the hairs. The condition in which patients have high level of the thyroid stimulating hormones is called as hyper thyroidism. We treated the patients with thyroxin tablet to decrease the level of TSH hormone. After that the patients were also treated with hair fin tablets, folli-one shampoo, wistin tablets and multivitamins for better growth of hair follicles. The other ingredients such as the hair fin tablets folli one shampoo, wistin tablets and multivitamins play important role in growth of hairs as they have many vitamins and minerals for hair follicle growth. But the hormonal imbalance in the alopecia patients can only be controlled by the regulation of TSH hormones that is only controlled by the thyroxin tablets.

5. CONCLUSION

It is concluded that there is involvement of the thyroid gland secretions in the growth of hair follicles and in the growth of hair. So, we can say that the hormonal imbalance in the thyroid gland may also cause alopecia (baldness). Especially the condition of hyper thyroidism mostly effects the hair follicles. So, we treated the patients with the thyroxin tablets to reduce the TSH level as well as other hair fin tablets, folli-one shampoo, wistin tablets and multivitamins for the nourishments of the hairs and hair follicle growth. These also reduce dendrites.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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