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Research Article

Hemoglobin, ferritin and thyroid profile in women with chronic telogen effluvium

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ABSTRACT

Background: Chronic telogen effluvium (CTE) is a distinct disorder characterized by an excessive, alarming and diffuse shedding of hair in females. CTE has a major psychological impact on women impairing their quality of life. In the Indian context, rise in the number of CTE patients due to changing and stressful life style, necessitates systematic studies of contributing factors of CTE.
Methods: A prospective study of premenopausal women in the age group of 18-50 years, presenting with diffuse hair loss of more than 100 hairs (clinical count) for more than 6 months, was conducted after obtaining an informed consent. General physical examination and a thorough dermatological examination of the scalp were carried out. Laboratory tests for blood hemoglobin, serum ferritin and thyroid hormone levels were performed. A subset of patients was also evaluated for stress levels using the Hamilton Anxiety Index and Hamilton Depression Index scales.
Results: One hundred patients with a mean age of 29 years, of which 35% in the age group 18-25 years participated in the study. Prevalence of CTE was high (91%) in the age group 18-40 years. Most of the women (71%) presented with complaints of hair loss, within 12 months of occurrence. Hemoglobin levels were found to be significantly low in 66%, low serum ferritin in 76%, and hypothyroidism in 24% of patients. Out of the 66 women with altered blood hemoglobin levels, 72.7% has significant stress levels and 60.4% of them were working women. Ten patients had significantly low serum ferritin levels of < 40 µg/L, in spite of having normal hemoglobin levels. Nine patients had low serum ferritin and low thyroid levels. As many as eight patients had lower than normal levels of all the three markers.
Conclusions: A significant number of patients had low hemoglobin, serum ferritin and thyroid levels, confirming a strong association of anemic conditions with CTE. Therefore, hemoglobin level, serum ferritin and thyroid levels need to be determined in CTE patients. Stress also plays a significant role in the causation of hair loss in women.

Keywords: Hemoglobin, Ferritin, Thyroid profile, Chronic telogen effluvium

INTRODUCTION

Hair has a significant cosmetic and social effect on an individual. The physical texture of hair reflects significantly on both the physical and the mental health of an individual. Women, in particular, are more concerned about even a small amount of hair loss which happens on their scalp because of the aesthetic appeal. Women presenting with diffuse hair loss are a very challenging problem for dermatologists. With the current

life style trends consisting of less nutritious food intake, stressful events and various types of medical problems, hair loss is on a continuous rise. The exact etio-pathogenesis of disorders of hair loss is poorly understood.

Abrupt, rapid, and generalized shedding of normal hair, usually more than 50-100 in number, 2-3 months after a triggering events like parturition, high fever, major surgery, etc., indicates Telogen effluvium (TE). When it persists for more than six months, it is called chronic telogen effluvium (CTE).[1] First described by David A Whiting in 1996, CTE is a distinct disorder characterized by an excessive, alarming and diffuse shedding of hair in females, along with a prolonged and fluctuating course, and near-normal histology.[1] CTE accounts for the majority of diffuse alopecia cases in reproductive age adult females. CTE has a major psychological impact on women impairing their quality of life. Although CTE can affect people of either sex in any age group, more cases are reported by women, probably because of the commonly associated disorders, like thyroid disorders, anemia and other nutritional deficiencies. Pregnancy and lactation could also play a significant role, and in addition, women might be more concerned about hair loss than men. At times, the management of the disorder is unrewarding and frustrating, to the dermatologist as well as the patient.

It is well known that a significant number of anagen hairs prematurely enter the telogen phase. This could be triggered by events like stress, anemia, surgery, delivery and medical conditions such as, hypothyroidism, fever and chronic diseases. However, the exact reason and the sequence of events have not been explained completely. Studies, so far, have not conclusively proven any correlation between chronic telogen effluvium and any of the above mentioned factors. Studies by Obaidat, Rushton, and Kantor et al., have shown a statistically significant decrease in serum hemoglobin and serum ferritin levels in CTE patients, and a significant improvement in hair loss after supplementing with iron in these patients.[2-4] The only drawback of the study was the small number of patients which may not reflect the true picture. There are mixed and conflicting results regarding the high prevalence of thyroid levels as a causing of CTE. However, thyroid function test is recommended in all patients with diffuse hair loss, even when they are clinically asymptomatic.[5] In the Indian context, a significant number of patients present with CTE, and their numbers are on the rise, due to changing and stressful life style, but there are few systematic studies of all of the above contributing factors of CTE. In view of this, a prospective study of hemoglobin, ferritin and thyroid hormone levels in premenopausal women presenting with diffuse hair loss, was conducted to understand the link between these serum levels and CTE.

METHODS

A prospective study was conducted between October 2010 and July 2013, after obtaining approval from the Institutional Review Board of Vydehi Institute of Medical Sciences and Research Centre, Whitefield, Bangalore. Women in the age group of 18-50 years (before menopause) who presented with diffuse hair loss, of more than 100 hairs (clinical count), for more than 6 months, were included in the study. Pregnant women, post-menopausal women and women with all other known causes of hair loss, like surgeries, medical illnesses or drug intake for a prolonged period, those on severe dieting, or severe episode of stress in the preceding six months, were excluded from the study. Women with evidence of pattern type of hair loss or patchy hair loss or any structural abnormalities were also excluded from the study.

After obtaining an informed consent, patients were evaluated to check for above mentioned factors. General physical examination was conducted to look for any signs of significant illnesses like pallor, thyroid swelling, lymphadenopathy etc. Thorough dermatological examination, including that of the scalp, was carried out. Simple clinical tests like hair pull test were done to confirm the clinical diagnosis of CTE. Following these tests, laboratory tests for blood hemoglobin, serum ferritin and thyroid hormone levels were performed on an empty stomach. Other investigations were carried out when necessary. A subset of patients was also evaluated for stress levels using the Hamilton anxiety and depression scale.[6,7] Patients found to have any abnormalities in the results were referred to the physician for further management.

RESULTS

One hundred patients with a mean age of 29 years participated in the study. Of this 70 women were working. The demographic characteristics of the subjects are shown in Figure 1. Among the subjects, prevalence of CTE was high in the age group 18-40 years (91%) and the maximum number of patients (35%) was in the age group of 18-25 years. Most of the women (71%) presented with complaints of hair loss, within 12 months of occurrence.

Hemoglobin levels were found to be significantly low in 66% of patients included in the study, while the remaining 34% patients had normal levels. Serum hemoglobin levels less than 12 g/dL as defined by the World Health Organization (WHO) was considered as significant.[8] Serum ferritin levels were found to be low in 76% of patients at < 40 µg/L, and the remaining patients had normal serum ferritin levels. Twenty four patients were found to be hypothyroid.

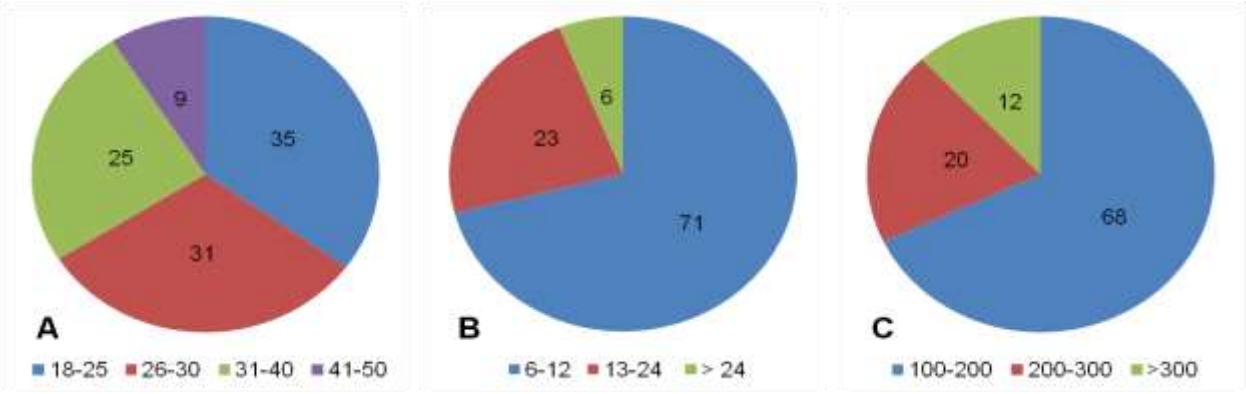

Figure 1: Demographic characteristics of the subjects.

Sixty six women who had altered blood hemoglobin levels were assessed for anxiety levels, using Hamilton Anxiety Index and Hamilton Depression Index scales. Of these, 48 (72.7%) had significant stress levels, out of which 29 (60.4%) were working women.

Ten patients had significantly low serum ferritin levels of < 40 µg/L, in spite of having normal hemoglobin levels. In view of this, hemoglobin level alone may not be sufficient to diagnose anemia in patients with hair loss.

Nine patients had low serum ferritin and low thyroid levels. As many as eight patients had lower than normal levels of all the three markers.

DISCUSSION

Out of the subject population (N = 100), 71% of the patients were seeking treatment for hair loss within 6-12 month duration of illness. This probably reflects on the high level of awareness and concern shown by the women regarding hair loss.

Stress plays a very important role in causing hair loss, especially in working women, as seen from observation of almost 72% of subjects considered for assessment of anxiety and depression levels were found to have significant stress levels. Of these, 60% were working women.

The prevalence of anemia in women of reproductive age in general population is estimated to be 30-50%, depending on various socio-economic factors, like community, education, place of living, etc.[8] In the present study, anemia was observed in 66% of the patients, reflecting a significant increase in patients with TE and there appears to be a strong correlation between the two. This is in line with the studies by Rushton and Kantor et al. showing a statistically significant decrease in serum hemoglobin and serum ferritin levels in patients with CTE.[3,4] Similarly, Obaidat et al. have reported a significant association between serum ferritin levels and CTE, in their study on potential relation between TE and Iron deficiency in women.[2]

On the other hand, there are also studies where anemia of iron deficiency does not seem to play a role in manifestation of CTE. Sinclair et al. have concluded that no clear association exists between low serum ferritin and CTE hair loss.[9] Similarly Olsen et al found that there was no statistically significant increase in the incidence of iron deficiency in premenopausal CTE, based on their case-control study of female pattern hair loss in CTE patients in comparison to control subjects.[10] However, considering that the present study patients come from lower socio-economic strata of a developing country with highly prevalent disorders like anemia, blood loss and thyroid disorders, it would be reasonable to attribute CTE to these causes, than to compare with the findings in western population.

Prevalence of subclinical hypothyroidism in women in India has been estimated to be 9-12%.[11] In the present study, 21% of the CTE patients were found to be hypothyroid, indicating that hypothyroidism could also be a significant factor leading to CTE.

A prospective study of women patients with rapid and considerable hair loss was conducted to understand the role of iron deficiency and hypothyroidism in the development of CTE.

CONCLUSION

A significant number of patients had low hemoglobin, serum ferritin and thyroid levels, confirming a strong association of anemic conditions with CTE. Therefore, serum ferritin and thyroid levels need to be determined in CTE patients, even if patients are asymptomatic. Even in patients with normal hemoglobin levels, it becomes necessary to determine serum ferritin levels to confirm iron deficiency, and not consider hemoglobin level at face value. In addition, stress also plays a significant role in the causation of hair loss in women. A large case-

control study is necessary to provide a clear picture and confirm improvement in hair loss after iron supplementation

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