

Role of Iron Deficiency in Chronic Diffuse Hair Loss

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Abstract

There are conflicting reports of association between iron deficiency and hair loss in the literature. So we conducted this study to evaluate the role of iron deficiency in chronic diffuse hair loss in women of reproductive age group. Serum ferritin, a marker of iron deficiency, was recorded in 150 consecutive patients of chronic diffuse hair loss (FPHL n=69, CTE n=81) and in healthy controls (n=100). The mean serum ferritin (SF) recorded was 9.87, 10.80, 10.30 and 11.20 ng/mL for FPHL, CTE, total patients (FPHL and CTE) and control group respectively, and it did not show any significant difference between these groups. Number of patients who recorded a serum ferritin label of less than 10 ng/mL (normal range 10–126ng/mL) were 48 (69.51%), 51 (62%), 99 (66%) and 63 (63%) for FPHL, CTE, total patients and controls respectively, and this also did not reveal any significant difference between the groups. We did not find any association between low serum ferritin (iron deficiency) and chronic diffuse hair loss in women of reproductive age group.

Keywords: Diffuse hair loss, Female pattern hair loss, Chronic telogen effluvium, Iron deficiency

Introduction

It is well known that iron deficiency (ID) is associated with a lot of pathological conditions. However, the role of iron in hair loss is not clear yet. There are conflicting reports of association between iron deficiency and hair loss. Some suggest a definitive association,¹⁻⁴ while others deny it.⁵⁻⁸ The purpose of this study was to evaluate the role of iron deficiency in chronic diffuse hair loss in women of reproductive age group (15–45 years) and to present an overview on the subject. Serum ferritin is an early and specific marker for ID, so it is used for detecting ID.

Materials and Methods

This was a prospective observational study carried out on patients in the Department of Dermatology of Dr Baba Saheb Ambedkar Medical College and Hospital. We

studied 150 consecutive women in the reproductive age group (15–45 years) who attended the skin OPD and were diagnosed as female pattern hair loss (FPHL) or chronic telogen effluvium (CTE), lasting for more than 6 months. For normal healthy controls, age-matched 100 subjects who had visited the hospital for a check-up with no serious disease were selected. Study subjects had no history of chronic underlying diseases, abnormal thyroid function, and inflammatory profiles. All patients underwent laboratory screening including CBC, urine for routine and microscopic examination, ESR, serum ferritin, serum iron and total iron binding capacity (TIBC) and thyroid function test. FPHL was diagnosed as Ludwig (Fig. 1), Olsen (Fig. 2), or Hamilton types (Fig. 3), based on clinical examination, and if required a biopsy was undertaken. CTE was labeled as a chronic recurring condition without any patterned hair loss.⁹ A total 150 patients comprising of FPHL (n=69) and CTE (n=81), along with 100 healthy controls (n=100) were analyzed.

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Figure 1. Female Pattern Hair Loss (Ludwig Type) Showing Central Thinning; Figure 2. Female Pattern Hair Loss (Olsen Type) Showing Thinning of Central Parting Hair Line; Figure 3. Female Pattern Hair Loss (Hamilton Type or Male Pattern Type) Showing Bitemporal Recession).

Results

The results of the study are summarized in Table 1. Out of the total 150 patients, 69 were diagnosed as FPHL and 81 as CTE. The mean age of the subjects was 33, 27.80, 30.21 and 31 years for FPHL, CTE, Total patients (total of FPHL and CTE) and controls respectively. The mean serum ferritin (SF) recorded was 9.87, 10.80, 10.30 and 11.20 ng/mL for FPHL, CTE, total patients and control group respectively. The number of patients who recorded a serum ferritin label of less than 10 ng/mL (normal range 10–126 ng/mL) were 48 (69.51%), 51 (62%), 99 (66%) and 63 (63%) for FPHL, CTE, total patients and Controls respectively. Mean hemoglobin was 12.25 for FPHL, 10.70 for CTE, 11.44 for total number of patients and 11.01 for controls. The number of patients who recorded a hemoglobin level of less than 12 gm were 21 (30 %) in FPHL, 36 (44.44%) in CTE, 57 (38%), in total patients and 48 (48 %) in control group.

Table 1. Clinical Parameters of Patients

Parameters	FPHL	CTE	Total (FPHL+CTE)	Controls
No. of participants	69	81	150	100
Mean age in years	33	27.80	30.21	31
Mean serum ferritin (ng/mL)	9.87	10.80	10.30	11.20
No. of pts (%) with serum ferritin below 10 ng/mL	48 (69.51%)	51 (62.96%)	99 (66%)	63 (63%)
Mean Hb in gm	12.25	10.70	11.44	11.01
No. of pts (%) with Hb below 12 gm	21 (30.43%)	36 (44.44%)	57 (38.00%)	48 (48%)

Discussion

The literature suggests that iron deficiency (ID) may play a role in hair loss, especially in female pattern hair loss (FPHL) and chronic telogen effluvium (CTE), and serum ferritin is considered to be the best measure for assessing the iron deficiency.

The mean serum ferritin recorded in this study for FPHL (9.87), CTE (10.80), total patients of FPHL and CTE (10.30) and control group (11.20) did not show any significant difference. The percentage of patients with serum ferritin of less than 10 ng/mL in the FPHL (69.51%), CTE (62.95%), total patients (66.00%) and control group (63%) also did not reveal any significant differences. These findings are more or less similar with the findings of Oleson et al.⁵ who concluded that there was no statistically significant increase in the incidence of iron deficiency in women with FPHL or CTE versus control subjects. Similar inferences were drawn in other studies.⁶⁻⁸ However there are studies which concluded that low serum ferritin/iron deficiency is strongly associated with hair loss.¹⁻⁴ The relationship between nonscarring scalp alopecia in women and iron deficiency continues to

be a subject of debate,^{10,11} and the differences in various studies may be due to different study designs, absence of randomized controlled protocols, studies with smaller number of patients, etc. Despite contradictory reports, there are researchers who believe that treatment for hair loss is enhanced when iron deficiency, with or without anemia, is treated.¹⁰ The jury is still on, and largescale, multi-centric trials are needed to clearly define the role of iron deficiency in hair loss.

Conclusion

The study did not find any association between low serum ferritin (iron deficiency) and chronic diffuse hair loss in women of reproductive age group.

Conflict of Interest: None

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