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**Research Article** 

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# Is There A Relationship between Telogen Effluvium and Some Biochemical Elements in Iraqi Women?

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**Abstract:** Background: One of the most frequent reasons for hair loss worldwide, including in Iraq, is telogen effluvium, especially in women. Widespread scalp hair loss, resulting in common thinning, is an indicator of this hair illness. This condition developed as the result of a variety of leading to insults, including medications, trauma, psychological and emotional strain, surgery, pregnancy, labor, fever, and systemic infections. The study's goal: The present investigation was designed to evaluate the connection between serum levels of some biological elements and telogen effluvium. Patients and methods: Between April 2021 and January 2024, a private clinic at Baquba City, Diyala Provence, treated 200 female patients with diffuse hair loss. The patients' mean age was 24.8±4. The pull test for telogen effluvium—serum iron, ferritin, along with thyroid stimulating hormone (TSH)—was used to make the clinical diagnosis. Findings: Two hundred female patients with telogen effluvium were evaluated in a private clinic in Baquba City, Diyala Provence; all of the patients had normal TSH levels, and only ten (10) had low blood iron and ferritin levels (5%). The most frequent cause, based on the precipitating insult, was mental stress (70 cases, or 35%. Conclusion: It was determined that telogen effluvium was unrelated to TSH levels and had a weak correlation with low serum iron or ferritin levels. Stress on an emotional level was the most prevalent triggering cause.

Keywords: Telogen effluvium, Serum ferritin, Pull test, TSH.

#### **INTRODUCTION**

Women's hair loss is a difficult as well as frequent problem for dermatologists. While almost 25% of women in Western nations have hair loss, the frequency in Iraqi women is unclear (Moeinvaziri, M. et al., 2009). Female patterned hair loss (FPHL) and telogen effluvium (TE) are the most common causes of hair loss (Rasheed, H. et al., 2013). Acute and chronic telogen effluvium occurs by a transition from a high percentage from anagen towards telogen hair with a small proportion (from 90/10 - 70/30). Emotional strain, starvation, surgery, pregnancy, childbirth, and drugs are the primary causes for telogen effluvium (Shapiro, J., 2007). The etiology of FPHL (familial illness) relied on androgen and genetics (Vujovic, A. et al., 2014). Diffuse hair loss, sometimes with a first start, is an indicator of TE (Fatani, M.I. et al., 2015). It is also a chronic kind which endures longer and has a more subtle beginning (Fatani, M.I. et al., 2015; Sinclair, R., 2005; Whiting, D.A., 1996). Abrupt, widespread loss of typical club hair is an indication of this hair cycle anomaly (Harrison, S. & Sinclair, R., 2002). A number of physical or emotional stressors, such as delivery, a high temperature, crashing, losing weight, major surgery, certain medications, and mineral and vitamin shortages, might cause it to show up after five to six months. The pull test, which involves manually pulling bands of hair with between twenty and thirty hairs in every draw to observe hair loss, is used to diagnose it; if there are over five hairs on each pull, telogen effluvium is

indicated (Bernstein, G.M. *et al.*, 1988). According to some research, iron insufficiency and hair loss are related with TE (Fatani, M.I. *et al.*, 2015; Bernstein, G.M. *et al.*, 1988).

Additionally, cheilosis, koilonychia, and chronic common telogen hair loss can be brought on by iron deficiency (10). Since iron is required for many vital physiological processes of the hair follicle, a lack of it may interfere with the production of new hair. However, research on iron's role in hair loss produced mixed findings. Some of these disparities could be connected to the limits of tests for identifying iron deficiency, which is the most frequent dietary deficit in the world today (Fatani, M. I. et al., 2015; Trost, L. B. et al., 2006). The body's iron is separated into compartments for storage, transportation, and function. The content of serum ferritin is the most accurate indicator of storage iron, which is the iron found in the body (either ferritin or hemosiderin) (Fatani, M. I. et al., 2015; Trost, L. B. et al., 2006). Transport iron is the iron bound to transferrin to transport iron to tissue. Functional iron, the iron bound to hemoglobin, is measured by the concentration of hemoglobin and hematocrit (Fatani, M. I. et al., 2015; Trost, L. B. et al., 2006). Definitions of iron deficiency according to those compartments include iron depletion, irondeficient erythropoiesis, and iron deficiency anemia. In iron depletion, functional and transport iron are normal, but storage iron is decreased. In



iron-deficient erythropoiesis, both storage and transport of iron are decreased, while in irondeficiency anemia, all three iron compartments are decreased (Trost, L. B. et al., 2006; Arosio, P. et al., 2002). Iron deficiency anemia can also be defined as absent bone marrow in iron stores (determined by bone marrow iron smears), an increase in hemoglobin concentration by more than 1.0 g/dL after iron supplementation therapy, or abnormal values of other biochemical tests such as serum ferritin level (normal level is ranged between 12- 300 ng /ml), (Fatani, M. I. et al., 2015; Arosio, P. et al., 2006). Ferritin is a highly conserved protein complex that plays an important role in storage iron and is recognized as the main iron-binding protein in non-erythrothyroid cells (Trost, L. B. et al., 2006; Arosio, P. et al., 2002). Low serum ferritin levels were specific to iron insufficiency because only iron shortage leads to extremely low serum ferritin concentrations. Ferritin levels in women typically vary from 12 to 150 nanograms/milliliter. Normal does not, however, imply the ideal level; for both men and women, 70 ng/ml or higher is seen to be ideal (Rushton, D. H, 1993). Because the causal relationship between iron deficiency and TE is up for debate.

## PATIENTS AND METHODS

#### **Study Protocol:**

From April 1, 2021, to January 1, 2024, at a private hospital at Baquba City, Diyala Provence

#### **Design of the Study:**

Two hundred female patients having diffuse hair loss were investigated as a part of the research. Their mean age is 24.8±4 years, with a range of 16 to 56 years. They complained of scattered hair loss that persisted, ranging from two months to three years. Upon evaluation, a pull test showed all individuals had telogen effluvium. In order to rule out alternative structural and functional reasons of hair loss, prior episodes of hair loss, and a family history of the same problem, all patients had a thorough medical history as well as physical examination. To determine the kind of hair loss, pull tests were also employed. Serum iron, ferritin, while TSH levels were measured in each patient, and Clinic Square was used to compute the results.

#### **Research Population:**

An across-sectional research design was employed in this investigation.

#### **Ethical Consideration:**

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Prior to the study's begin, institutional ethical committee permission was acquired.

#### **Statistical Analysis**

To determine if there is a correlation among blood group and CL, statistical analysis employs the ttest. SPSS version 20 was utilized for analysis, along with Excel 2010.

#### **RESULTS**

In a private clinic located in Baquba City, Diyala Province, two hundred female patients experiencing hair loss were attended to. For the period from (1 April 2021 to Jan. 2024), their ages varied from 16 to 56 years, with an average age of 24.8±4 years. They reported experiencing hair loss lasting from two months to three years, did not mention other causes of hair loss as previously discussed, and were clinically diagnosed with telogen effluvium. The findings indicated that only (Trost, L. B. et al., 2006) patients exhibited low serum iron and ferritin levels (5%), all of whom had normal TSH.

## DISCUSSION

Our research encompassed (200) female Iraqi patients observed in a private clinic located in Baquba City, Diyala Province, with an average age of (24.8+ 4); their serum iron, ferritin, and TSH levels were normal, except for (Trost, L. B. et al., 2006) patients who had low serum iron and ferritin. This indicates that there was no significant relationship between iron and ferritin deficiency and telogen effluvium, nor any connection to TSH as a cause of the disease. This study aligns with and is consistent with a study conducted in Britain on November 1, 2002 (Sinclair, R. et al., 2002). Additionally, research conducted at Duke University in December 2010 with 381 white women found no correlation between blood iron, ferritin, along with TCH levels, and Telogen hair loss. However, our research contradicted a January 2022 study conducted in a hospital with 264 female patients in a friendship between China and Japan (Nielson, T. A. et al., 2022). Additionally, both investigations showed a decrease in serum iron as well as ferritin levels in relation to telogen hair loss, which is consistent with a 2015 research conducted in the Makah region of Saudi Arabia (Fatani, M. I. et al., 2015).

## CONCLUSION

It was concluded found there was a significant relationship among telogen hair loss along with serum iron, ferritin, as well as TSH levels.

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