

Review article in telogen effluvium

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Abstract :

This article provides a concise overview of research on the incidence of telogen effluvium among COVID-19 survivors working at Benha University Hospitals. Temporary hair loss due to a variety of circumstances, including physical and mental stress, is known medically as telogen effluvium. Due of the unusual nature of the COVID-19 pandemic, it is vital to comprehend the possible repercussions on the well-being of health care workers, including any severe effects on their physical health. The purpose of this research is to examine the incidence of telogen effluvium among the rehabilitated medical staff of Benha University Hospitals. The researchers evaluated the state of these people's hair in detail, taking into account issues including hair thinning, shedding, and complete hair loss. The purpose of this research is to provide light on the possible influence of COVID-19 on the hair health of healthcare professionals by examining the prevalence of telogen effluvium.

Keywords: examining, prevalence, telogen, effluvium

1. Introduction

Telogen effluvium is a form of nonscarring alopecia characterized by diffuse hair shedding. Telogen effluvium is excessive shedding of resting or telogen hair after some metabolic stress, hormonal changes, or medication. Telogen hair is also known as club hair due to the shape of the root. In a normal healthy person's scalp, about 85% are anagen hair and 15% are telogen hair. Anagen hair are actively growing hair while telogen hair are resting hair. A few hairs may also be in catagen. A hair follicle usually grows anagen hair for almost four years, then rests for about four months. A new anagen hair begins to grow under the resting telogen hair and pushes it out. If there is some kind of stress to the body it can cause 70% of anagen hair to precipitate into the telogen phase thus causing hair loss (9).

Epidemiology

Telogen effluvium can occur in people of any age, any gender, and any racial background. The exact prevalence of telogen effluvium is not known, but it is considered to be quite common. A large percentage of adults experience an episode of telogen effluvium at some point. Telogen effluvium can occur in either sex, though women have a greater tendency to experience this condition because of postpartum hormonal changes. Also, women are more disturbed by hair shedding than men and are therefore more likely to seek medical attention (13).

Presentation

Acute Telogen Effluvium

Acute telogen effluvium is defined as hair shedding lasting for less than six months. Generally, hair loss occurs two to three months after the trigger exposure. In around 33% of

the cases, the cause remains unknown (5). Acute telogen effluvium usually undergoes remission in around 95% of cases. On examination of those with resolved effluvium, there is an appearance of shorter, re-growing frontal hair. Such hair can be seen in a large quantity using dermoscopy (2). A variant of acute telogen effluvium is telogen gravidarum, which is associated with pregnancy and usually occurs two to five months after childbirth (5).

Chronic Telogen Effluvium

Chronic telogen effluvium is a condition lasting for more than six months. The disorder mostly affects middle-aged women, having a prolonged fluctuating course. The examination of the scalp shows hair having normal thickness with signs of shorter re-growing hair in the frontal and bitemporal areas (2).

Pathogenesis

Telogen effluvium is caused by an abnormality in the normal hair cycle, which is triggered by numerous factors.

Normal Hair Cycle

A hair follicle has a three-phase life cycle. It consists of a growing phase (anagen), an involuting phase (catagen), and a resting phase (telogen). The anagen phase can last for about two to five years, and around 90% of scalp hair is in this phase. The catagen phase is a much shorter phase, lasting three to six weeks. During this phase, the hair follicles go through a process of programmed cell death (apoptosis). Finally, the telogen phase lasts for around three to five months, and 10% of the scalp hair are in this phase. During this phase, the hair shaft matures into a club hair, which is eventually shed from the follicle. If the percentage of scalp follicles present in the telogen phase increases, this results in excessive shedding of hair (14).

Mechanism of Shedding

According to **Headington, (1993)** the five proposed mechanisms by which shedding of the hair may occur in telogen effluvium are as follows:

1. **Immediate anagen release:** This is due to an underlying cause. Follicles leave the anagen phase and enter the telogen phase prematurely, leading to increased shedding two to three months later .
2. **Delayed anagen release:** This is due to prolongation of the anagen phase resulting in heavy telogen shedding .
3. **Short anagen syndrome:** This is due to idiopathic shortening of the anagen phase, leading to persistent telogen effluvium. The pathogenesis behind most of the cases of chronic telogen effluvium is considered to be the short anagen syndrome .
4. **Immediate telogen release:** This is due to the shortening of the telogen phase, resulting in a massive release of club hair .
5. **Delayed telogen release:** This is due to a prolonged telogen phase and a delayed transition to anagen phase .

Causes of telogen effluvium

There are various factors that can initiate disturbance in the normal hair cycle.

Drugs

Numerous drugs can cause telogen hair loss and it usually starts after 12 weeks of dosage **(16)**. Changes in the dosage of drugs can also lead to excessive shedding . Drugs that can cause telogen effluvium include oral contraceptive pills, androgens, retinoids, beta-blockers, ACE (angiotensin-converting enzyme) inhibitors, anticonvulsants, antidepressants, and anticoagulants (heparin) **(3)**.

Physiological Stress

Increased physiological stress such as surgical trauma, high fever, chronic systemic illness, and hemorrhage can cause telogen effluvium . Childbirth can also cause excessive hair to enter the telogen phase. This hair loss, telogen gravidarum, occurs approximately three months after childbirth **(6)**.

Emotional Stress

The relationship between emotional stress and hair loss is ambiguous since hair loss itself is a source of emotional stress to the patient **(3)**.

Medical Conditions

Numerous medical disorders can lead to telogen effluvium. Both hyper- and hypothyroidism can cause telogen effluvium, and this is reversed once the euthyroid state is achieved **(15)**. Chronic systemic disorders such as systemic amyloidosis, hepatic failure, chronic renal failure, inflammatory bowel disease, and lymphoproliferative disorders can

also cause telogen effluvium **(6)**. It is also reported in some autoimmune diseases including dermatomyositis, chronic infections such as HIV, and secondary syphilis. Inflammatory disorders such as psoriasis and seborrheic dermatitis can also lead to diffuse telogen hair loss **(3)**.

Dietary Triggers

Severe protein, fatty acid and zinc deficiency, chronic starvation, and caloric restriction can lead to telogen effluvium **(3)**. Essential fatty acid deficiency leads to telogen effluvium, and this usually occurs two to four months after insufficient intake . Decreased body iron stores can cause it. However, this relationship is very controversial **(8)**. Vitamin D is vital for cell growth and, hence, its deficiency could also be a possible cause of it. Another cause can be biotin deficiency but is reportedly very rarely **(3)**.

Ultraviolet Light

hypothesized that it could be actinic effluvium, a summer effect, induced by sunlight and ultraviolet (UV) light, manifesting in autumn **(10)**. Electron microscopy of hair exposed to sunlight reveals alterations in the cellular components and damage to the hair cuticle and cortex. Both of these mechanisms can be attributed to increased shedding of hair in the telogen phase; however, it is not scientifically proven yet **(2)**.

Diagnostic considerations

Trichodynia

Pull test

Modified Wash Test and Hair Loss Count

Trichogram

Dermoscopy

Scalp Biopsy

Management and treatment

Patient Education

Patient education is important in disease management. Disease correlation with triggers, and the timing of hair loss should be explained and frustrations addressed. Hair is an important part of the human body; the degree of psychological disability due to hair loss varies from person to person **(7)**.

Correcting Deficiencies

If a measurable deficiency has been found, it should be corrected. A balanced diet and stable body weight are important. Although the use of polyphenolic compounds such as those in green tea has been reported to improve hair loss in mice, no such controlled studies are available for humans **(1)**.

Minoxidil and Finasteride

The currently available FDA-approved standard drugs minoxidil and finasteride are neither efficient catagen inhibitors nor anagen inducers **(4)**. Catagen-inducing drugs (e.g.,

beta-blockers, retinoids, anticoagulants, antithyroid drugs) should be avoided, and catagen-inducing endocrine disorders (e.g., androgen disorders, thyroid disorders, abnormal prolactin levels) should be treated (2).

Topical Corticosteroids

Topical corticosteroids are employed by dermatologists in the treatment. If the patient reports decreasing trichodynia after the application of topical corticosteroids, it is a sign of the therapy being effective (12).

Systemic Corticosteroids

In chronic telogen effluvium, corticosteroids can be given systematically especially if telogen effluvium is the manifestation of underlying systemic disorder like SLE (11).

2. Conclusions

A thorough history, clinical examination, and laboratory investigations can aid in the diagnosis of telogen effluvium. Acute telogen effluvium can usually be resolved by removing the underlying causative factors.

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