



Research Article

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## Telogen Effluvium and Alopecia Areata as Clinical Manifestations of Covid-19

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### Abstract:

Every day we naturally lose an average of 100 hairs, but different health problems can accelerate this loss, one of them is the current pandemic called by the World Health Organization as "Novel Coronavirus Disease 2019 (SARS-2 /COVID-19), where various predominantly respiratory clinical symptoms have been exposed such as fever, cough, chest pain, dyspnea, myalgia, asthenia and others that limit them to carry out their daily activities, however as the Over time, it has been shown to attack other organs, giving rise to new symptoms, although with less effect, such as severe hair loss, which have a negative impact on the quality of life of patients, favoring states of anxiety or depression as a result of what is known as effluvium. telogen or alopecia areata.

**Keywords:** covid-19, effluvium, alopecia, sars cov 2, pandemic

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### Introduction

Hair diseases are becoming more frequent every day in the consultation; A normal head of hair consists of 100,000 hair follicles with a shedding per day that ranges between approximately 60 to 120 hairs. It is estimated that the new SARS COV-2 virus generates long-term sequelae that have not been studied much but are of great social interest, within those associated with two forms of severe hair loss known as telogen effluvium (1), this alteration is different from other types of alopecia

and is secondary to multiple triggering causes that are toxic, metabolic, nutritional, infections, medications and the puerperium (2); On the other hand, there are patients in whom other factors such as autoimmune diseases or genetic predisposition intervene, already proven with others such as infectious and psychological ones, among which stress is included as part of this complex. This condition is known as alopecia areata, characterized by a non-scarring hair loss (3) (4).

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Alopecia areata affects about 1% of the population, being more frequent in young women and older adults, predominantly in the age group between 15 and 40 years, however, around 10 to 42% of cases are due to family history (5) with a low risk of suffering from it throughout life of 1.7% (6).

Hair loss has been reported in around 20% of post-Covid-19 patients; the few investigations carried out consider it to be attributable to telogen effluvium (7), which results from the action of a stimulus that suddenly interrupts the hair loss phase. growth of the hair follicles (anagen) that usually lasts between 2-7 years, giving way to the phases of involution (catagen or transition) with a date between 3-6 weeks and finally between 2 and 3 months the follicle rest (telogen); however, its pathophysiology in relation to covid-19 continues to be a subject of debate (8).

### Methodology

The study design is adapted to a systematic review of the evidence present in the scientific literature on telogen effluvium and alopecia areata, the recently discovered new skin manifestations caused by COVID-19.

The literature search took place between 1991-2021, delving into various bibliographic databases in order to obtain information and review previous studies on the exposed topic. The keywords and boolean operators used were "covid-19", "effluvium", "alopecia", "sars cov 2", "pandemic" described through DeCS (Descriptors in Health Sciences). In order to obtain a greater update on the subject, the articles published in the last 30 years were set as a temporary filter for the search.

### Results

COVID-19 is an acute respiratory disease caused by a new human coronavirus called SARS-CoV-2

that continues to be a topic of global relevance with clinical symptoms of variable course ranging from asymptomatic infection to severe pneumonia that is frequently fatal. causing high mortality in patients with associated medical comorbidities such as cardiovascular disease, chronic respiratory disease, diabetes and cancer. Most patients have fever, cough, asthenia, anorexia, dyspnea and myalgia, anosmia, ageusia, other types have been described such as neurological and gastrointestinal, recently several publications have shown that the integumentary system has also been affected both in active infection as after the resolution of this, emerging new manifestations already known by medicine such as telogen effluvium and alopecia areata (9)(10).

Hair is a skin appendage of great diagnostic importance due to the frequency of pathologies that affect it and the different options for its treatment, as well as being part of the body image and identity of each person (11). Its production is a cyclical process that consists of 3 phases: the anagen phase, which represents 90-95% of the hairs on the scalp, the transitional or catagen phase, 1-2%, and the resting or telogen phase, 10-10%. 15% (12). The alteration in this capillary cycle acquires the so-called acute telogen effluvium and alopecia areata, pathologies that are diagnosed clinically with a correct anamnesis and medical examination (13).

Telogen effluvium is characterized by a very striking reversible hair loss of around 50% of it for a period of less than 6 months, it is considered chronic when it exceeds it (13); It should be noted that it usually appears 2 to 3 months after the triggering episode, which pauses growth in the anagen phase, enters the catagen phase and later telogen, which will lead to loss. (14) (15). Its treatment is inclined in the disappearance of the cause.



**Fig 1. Telogen effluvium in different locations of the scalp. Taken from: Fernando Carlos Guillén-Ortega. Telogen effluvium and alopecia areata: associated symptoms in patients with persistent COVID-19. Med Int Mex. 2021; 37 (5): 716-720**

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On the other hand, alopecia areata is a disease of autoimmune origin specific to the organ, due to the collapse of the immune privilege of the hair follicle, it has been related to other diseases such as Hashimoto's thyroiditis, type I diabetes mellitus, Addison's disease, vitiligo, lupus erythematosus, HIV, Down syndrome, recently COVID-19, among others (16). Regarding its physiopathogenesis, it is believed that the inflammatory cells attack the follicles in the synthesis phase (anagen), leading immediately to the catagen phase, which leads to the generation of follicle dystrophy, preventing adequate anchorage to it, ending in the loss of the follicle. hair (17). Treatment depends on the extent of the disease and the patient's age, with the best evidence being intralesional corticosteroid injection and induction of contact allergy; however, to date there is no curative treatment (18).

In 2021, the private medical center in the state of Chiapas, Mexico, published a study that aimed to evaluate the relationship between COVID-19 and hair diseases (telogen effluvium/alopecia areata); integrating a total of 28 patients, 12 of them were women and 16 men, diagnosed with SARS-CoV-2 disease verified by laboratory tests (PCR, IgG or both) classifying them by severity (5 severe cases, 10 moderate and 13 mild) who had hair loss. As a result, it was obtained that hair loss was greater in extension and more prolonged in women, 5 of these cases were long-standing (> 6 months). In addition, a relationship between the severity and chronicity of the disease was examined; considering it directly proportional, that is, the longer the hospitalization time, the longer the period of hair loss; with a case that ended in baldness. However, it should be noted that there were cases in which no association was documented, such as a mild case of COVID 19, the fall was sustained for more than 6 months. Telogen effluvium was observed in 24/28 cases and in 4/28 cases it was alopecia areata (19).

### Discussion

The SARS-CoV-2 infection is generating surprises as it becomes known how the virus interferes with our body, proving to be a virus that generates multi-organ damage. At first, it was

known that the virus caused respiratory problems, however, with the passage of time, dermatological problems have also emerged in some affected,

managing to attract the attention of specialists who evaluate the relationship between the coronavirus and alopecia (20).

Scientists continue to decipher the pathophysiology of hair loss associated with covid-19, in other words, to identify the mechanisms linked to the origin of this condition. It is suggested that proinflammatory cytokines and endothelial inflammation generated by the virus could be the triggering factors promoting telogen effluvium by damaging the cells of the hair-producing matrix. An increase in proinflammatory cytokines (interleukin 1b, interleukin 6, tumor necrosis factor  $\alpha$ , and type 1 and 2 interferon) generate premature teloptysis and endothelial inflammation of peripapillary vessels, thus explaining hair loss in some post-febrile states; In addition, possible hypotheses are incorporated with emotional stress, and the medications administered in hospitalized patients (21) (22).

Finally, in the psychological field, multiple investigations show that alopecia has a considerable emotional impact. Responses abound in which loss of self-esteem, confidence and poor quality of life are described, and patients have also reported feelings of anger, worry and stress that could lead to anxiety and depression. The repercussions are much greater in women than in men, about 40% of women with alopecia have marital problems and about 63% say they have problems in the workplace (23)(24).

### Conclusion

It has been known that SARS COV 2 infection has affected multiple systems (respiratory, gastrointestinal, neurological, integumentary), some manifestations seen more than others, such as diseases involving the hair (alopecia areata and telogen effluvium) that have had a significant increase in the number of cases in recent years due to the large number of positive patients for covid-19 worldwide and that it has a close relationship with its growth cycle. It is relevant that health personnel understand the situation in order to provide adequate advice to reduce levels of psychological stress in individuals, which although it has been highlighted that it does not directly compromise life, if it favors insecurity, states of anxiety and depression as well as dissatisfaction in physical appearance. Few studies have concluded this, so more research has been required on this association, especially on its

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pathophysiology, which can also impact possible treatments.

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