POST COVID-19 TELOGEN EFFLUVIUM. WHAT IS THE REASON?

Abstract. The publication draws attention to the relevance of dermatological manifestations of the post-COVID-19 syndrome. Telogen alopecia is one of them. Probable main mechanisms of development of this highly debatable problem among dermatologists are covered.

Keywords: telogen effluvium, post-COVID-19 syndrome, reasons, toxic drug effects.

Introduction. COVID-19 is an acute respiratory infection caused by a coronavirus, type SARS-CoV-2, in a pandemic of which the whole world has lived since March 2020. Multiple complications and long-term consequences of this disease are registered daily by doctors of various specialties and called post-acute Covid-19 syndrome. [1]. Telogen effluvium (reactive hair loss) is one of its manifestations. Nowadays, this topic is actively studied and discussed in the dermatological community.[2,3]. And Ukraine is no exception.

Hair is a unique structure, which is so sensitive to different influences. Stress, toxic affectation of hair follicle by microorganisms, drugs, or immune complexes, nutrition disbalance, endocrinopathies, improper care, and many other factors lead to local inflammation and hair loss. In coronavirus disease, most of these factors occur.
Stress occurs due to a psycho-emotional overload or an exhausted fever and intoxication. It initiates the release of active substances and neuromediators, such as acetylcholine, noradrenaline, dopamine, substance P, by nerve endings and the development of immune inflammation around the hair follicle. [4].

A well-known toxic effect of drugs, especially antibiotics and anticoagulants, provokes the immune complement cascade. Similar pathological processes in the dermis influence the skin appendages.

As the hair is intensively supplied, another mechanism is very important: direct damage to endothelial cells of small vessels by the virus or their indirect damage by immune cells, cytokines, and free radicals. A vasoconstriction, skin ischemia, and chronic inflammation develop. This is accompanied by hypercoagulation, vascular thrombosis. As a result, the hair did not receive any nutrition and enters the telogen phase. [5].

**Material and methods.** Overall, there were 72 patients with diffuse telogen alopecia (49 females and 23 males), aged 27-55 years, under observation. They applied for dermatological help from April 2020 to March 2021. It was 42% of our total outpatient intake. And their complaints were: intense hair loss, especially during washing and combing, reduction of its total volume, brittle and dry hair. Such symptoms were not previously noted by patient.

These manifestations began to be observed 54-72 days after the coronavirus infection. In 45 patients there was a moderate severity of Covid-19, in 22 – severe, and only in 5 - mild course of the disease. All of them used anticoagulants in different doses for 28-42 days.

93% of patients, with complicated forms, had prolonged fever and received broad-spectrum antibiotics (cephalosporins, macrolides, phtorquinolones, or its combination) for 7-20 days. 37 patients have received treatment on an inpatient basis and used a combination of two antibacterial drugs. 18 of them, with a severe form of the disease, were admitted to the ICU because had required supplemental oxygenation and intensive systemic corticosteroid therapy. The remaining patients tolerated the disease relatively well and have used only NSAD and antiviral medicines.
Only 4 patients had concomitant pathology: 2 with diabetes mellitus (type 2), 1 – arterial hypertension, 1 – chronic pyelonephritis, and they had moderate severity of the disease.

During the treatment in 5 patients have noticed drug-induced allergic reactions. 2 cases of fixed erythema, 2 – edema Quincke, and 1 – erythema multiforme.

**Results.** The examination of patients showed that the pathological process is localized on the scalp. In the majority, on the parietal and occipital areas. Intact frontal hairline, thinning of hair and, mostly, its dryness were noted. The skin in the foci without visible changes: color is normal, dryness and scaling are absent (Photo 1,2). The hair pull test was positive in all patients.

![Photo 1](image1.jpg)  A **35-year-old female with thinning hair in the parietal area**  ![Photo 2](image2.jpg)  Many foci of thinning and brittle hair in a 32-year-old male

At trichoscopy no inflammatory changes of the skin and hair follicles were noted; the number of follicles is evenly reduced; empty follicles are present. The severity of manifestations in the frontal and occipital areas is the same (Photo 3).

A comprehensive examination of each patient did not reveal any hormonal imbalance (the level of thyroid hormones, testosterone was normal), helminths (stool test and blood test for detection of antibodies to Toxocara canis, Giardia lamblia, Ascaris lumbricoides, Enterobius vermicularis were performed) or anemia.
(in general blood test only 7 samples were with high ESR), which are the most common causes of telogen effluvium. [6,7].

Photo 3. Trichoscopic picture: 1 – anizotrychosis (different diameter of a hair), follicular units with a single hair shaft; 2 – empty hair follicle; 3 – peripillar signs; 4 – vertically growing hair

In 17 patients we also revealed onychodystrophy, associated with alopecia. 10 cases of leukonychia, 5 - longitudinal melanonychia, and 2 – nail fragility and onycholysis.

Conclusion. Telogen effluvium is not a rare reason for patients to seek help from a dermatologist and at the time of the COVID-19 pandemic, it is increasing rapidly. Not only females but also males care about their hair health and such a symptom as intense hair loss alarms them.

After the data analysis, we would like to emphasize that this is a multifactorial disease. And the role of the virus is important in the development of post-COVID-19 complications.

Stress due to prolonged infectious disease, a toxic effect of drugs, which are taking during the treatment of COVID-19, hypercoagulation, and possible clotting of small skin vessels have a significant impact on the hair follicle.

The virus itself directly or through the initiation of the immune complement cascade may negatively affect the skin and its appendages. And we have a
confirmation of this. More than 20% of patients with telogen alopecia complained about changes in nails and allergic reactions in anamnesis too.

The obtained data also confirms the fact that manifestations of post-COVID-19 syndrome directly depend on treatment tactics. Anticoagulants and antibiotics taking has a proven damaging effect on the hair follicle.

References: