ISSN: 0975-3583,0976-2833 VOL14, ISSUE 01, 2023

AN UPSURGE OF ACUTE TELOGEN EFFLUVIUM IN POST COVID -19 INFECTION PHASE – A CLINICAL STUDY

Authors

DR.A.VIJAYA KUMARI,

Assistant Professor, Department of Dermatology, Government Medical College,Ananthapuramu.
Orcid ID: A. Vijaya Kumari https://orcid.org/0000-0002-9340-8253

DR.R.SREENIVASULU NAIK,

Assistant Professor, Department of Dermatology, Government Medical College, Ananthapuramu.
Orcid ID: R. SreenivasuluNaik https://orcid.org/0000-0002-9656-3507

DR.G.BHARATHI,

Assistant Professor, Department of Dermatology, Sri Venkateshwara Medical College, Tirupathi
Orcid ID: G. Bharathi https://orcid.org/0000-0001-7207-746X

DR.P.SRAVANI,

Associate Professor, Department of Pathology, Government Medical College, Ananthapuramu.
Orcid ID: P. Sravani https://orcid.org/0000-0001-8859-6758

Corresponding Author:

DR .P. SRAVANI ,
Associate professor, Department of Pathology Government Medical College, Ananthapur.515001.
PH.NO: 9292752123
E Mail.ID: chenna2593@gmail.com

ABSTRACT

Telogen effluvium (TE) is temporary loss of hair caused by extreme stress, such as trauma, shock, or illness. During the post COVID recovery phase, a greater number of patients presented with various cutaneous manifestations, which is a major concern. Telogen effluvium is one such cause of major concern among these patients. We present a study of post COVID-19 telogen effluvium at a tertiary care centre in south India.

The goal of this study is to analyse demographic, clinical, laboratory parameters and various patterns of telogen effluvium in post COVID-19recovered cases. Records of 52 individuals with telogen effluvium during the post- covid recovery phase were studied between June 2022 and November 2022. In each case, the available demographic, clinical data and relevant laboratory parameters were recorded.

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 01, 2023

Of the 52 patients who were included in the study, 35 (67.30%) were females, and 55.76% of study population were in the 30–40 age group. 15 (28.84%) of the 52 study patients had severe COVID-19 infection, while 37 had mild to moderate COVID-19 symptoms. Forty seven individuals (90.38%) had a positive hair pull test and diffuse alopecia was the most prevalent diagnosis (69.23%). Low levels of serum vitamin B12 were found in 73.07% of the cases.

Post- covid telogen effluvium may be caused by direct viral factors, psychological stress, nutritional deficiencies (Vitamin B12, iron), or drugs such as heparin. Such cases could be managed by identifying triggering factors, providing appropriate counseling, and adhering to a high protein diet supplemented with vitamins.

KEYWORDS: alopecia, COVID-19, telogen effluvium

INTRODUCTION:

The COVID-19 pandemic brought on by the brand-new SARS-CoV-2 (Severe Acute Respiratory Syndrome Corona virus) virus is still changing the world. A number of acute and chronic cutaneous symptoms have been connected to SARS-CoV-2 [1]. Telogen effluvium (TE) is a recent addition to the list of COVID-19 sequelae [2].

Telogen effluvium (TE) is a self-limiting, non-scarring hair loss condition that occurs 2-3 months after a triggering factor and is one of the most common causes of diffuse hair loss. The incidence of TE was reported to have increased during the COVID-19 pandemic, and the potential pathogenic mechanisms associated with acute TE were believed to include a direct viral impact on hair follicles, pro-inflammatory cytokines, and microthrombi[3-6].

We observed a sharp rise in the frequency of patients presenting with diffuse hair loss during post-COVID-19 recovery phase of the pandemic. The current retrospective clinical study revealed that one of the most typical COVID-19 recovery phase presentations is TE.

MATERIALS AND METHODS:

A hospital-based, retrospective study was carried out from June 2022 to November 2022. With permission from the appropriate authorities, the records of 52 patients who visited the OPD of the Department of Dermatology at the GovernmentMedical College, Ananthapuramu, with complaints of recent onset alopecia were analysed. The available demographic information, such as age and gender, was recorded. Along with the length of time it took for TE to start appearing following COVID-19 recovery, all clinical information pertaining to the history of COVID-19 and its therapy was documented. The duration and pattern of TE, the specifics of hair pull test, pertinent laboratory data , and treatment information, were recorded and analysed.

INCLUSION CRITERIA:

The study included all of the patients who presented with alopecia during the post- covid recovery phase.

EXCLUSIONCRITERIA:

Patients with severe systemic disorders, postpartum women, and patients with additional co-morbidities were not included in the study.

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 01, 2023

Institutional Ethical Committee approval was obtained (IEC-2/10/22**).** Informed consent was taken from patients according to the principles of Declaration of Helsinki.

STATISTICS:

Microsoft excel 2016 was used for statistical computing.

RESULTS:

In the current study, 52 patients were included. The study's participants ranged in age from 30 to 59 years old, with a mean age of 39.78. As demonstrated in Table 1, females were more frequently impacted in our study than men; specifically, 35 females (67.30%) and 17 males (32.69%) were affected. In our study, the male to female ratio was 2.05:1.

Table 1: Demographic characters of study subjects

Demographic data		**Percentage**
Gender	Females- 35 cases Males -17 cases	(67.30%) (32.69%)
Mean age	39.78 years	

All patients with a diagnosis of acute TE and a prior diagnosis of SARS-CoV-2 infection were included in this study. As per Table 2, 15 (28.84%) of these patients exhibited severe COVID-19 pneumonia, 28 (53.84%) showed moderate COVID symptoms, and 9 cases (17.30%) presented mild symptoms.

Table 2: Clinical characters of study subjects

Clinical characters	**Number of patients**	**Percentage**
Severe Covid Pneumonia Moderate Covid infection Mild Covid infection	15 28 9	28.84% 53.84% 17.30%
Positive Hair Pull Test	47	(90.38%)

In our study all the patients experienced excessive hair loss within 2–3 months of recovery from COVID-19 infection. 34.61% of cases presented with hair shedding after 12 weeks, 26.92% after 8 weeks, 19.23% after 4 weeks, and 15.38% after 3 weeks of recovering from COVID-19 infection, as shown in Table 3.

Table 3: Onset of symptoms post COVID-19 infection

S. No	**Duration**	**Number of cases**			**Percentage**
		Female	Male	Total	
1.	3 weeks	6	2	8	15.38%

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 01, 2023

2	4 weeks	8	4	12	19.23%
3	8 weeks	8	6	14	26.92%
4	12 weeks	9	9	18	34.61%

According to Table 4, the diffuse pattern of alopecia was the most predominant one in our study, occurring in 69.23% of cases.

Table 4: pattern of hair shedding

S.No	Pattern	Number of cases	Percentage
1.	Diffuse alopecia	36	69.23%
2.	Bi temporal	16	30.76%

Out of 52 cases of telogen effluvium in our study, it was observed that the majority of the patients had low serum Vitamin B-12 levels, as seen in 38 cases, i.e., 73.03 percent, as shown in Table 5.

Table 5: Serum Vitamin B12 levels

S.No.	Levels of Vitamin B12	Number of cases	Percentage
1.	Low (<200pg/ml)	38	73.07%
2.	Normal (200-911pg/ml)	14	26.92%

100% of the patients in our study received doxycycline and steroids; 71.5% of patients with moderate and severe COVID-19 cases received Remdesivir and Enoxaparin. In 25 cases, oxygen inhalation therapy was used. Only 15 cases of favipiravir use have been documented, as indicated in Table 6.

Table 6: Drugs administered forCOVID-19 infection

S.No	Management	Number of cases	Percentage
1.	Azithromycin	24	46.15%
2.	Favipiravir	15	28.84%

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 01, 2023

3.	Doxycycline	52	100%
4.	Remdesivir	37	71.15%
5.	Hydroxychloroquine	12	23.07%
6.	Systemic steroids	52	100%
7.	Enoxaparin	37	71.15%
8.	Oxygen inhalation	25	48.07%

CLINICAL PHOTOGRAPHS:

Figures 1–5 display a diffuse pattern of hair loss along with scalp thinning. A male patient's bi temporal pattern of hair loss is shown in Fig. 6

CLINICAL PICTURES:

FIG. 1

FIG. 2

FIG. 3

FIG.4

FIG.5

FIG.6

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 01, 2023

DISCUSSION:

Like any other febrile illness, COVID-19 has the potential to be a cause of TE, but the recent pandemic was accompanied by a number of factors that may have contributed to acute TE in some individuals, including hospitalization, severe psychological stress, the need for multiple medications, and nutritional deprivation.

Several studies have been conducted to look into the emergence of TE as a result of COVID-19. According to Cline et al. [7], the incidence of TE increased from 0.5% to 2.3%, roughly 3 to 4 months following COVID-19 infection. Similarly, Kutlu and Metin'set al [8] study showed that the incidence of TE increased from 0.4% to 2.7% during the COVID-19 pandemic period when compared to the same month in the previous year, which was a 5.51-fold increase in the number of cases of TE.

The current study included 52 patients. The age range of patients presenting with telogen effluvium was 30-59 years, and the mean age at presentation in our study was 39.78 years, which was similar to the study done by Mishra et al. [9], where the age range was 29-62 years and the mean age at presentation was 49 years. The age range in the study conducted by Babaei K et al. [10] was 8–62 years. The occurrence of TE even in children in their study could be attributed to the large sample size (526) in their study compared to only 52 cases in our study.

Females were more commonly involved than males, i.e., among the total study population of 52 in our study, 35 (67.30%) were females and 17 (32.69%) were males. Females were more commonly involved with TE following the post-recovery phase of COVID 19, according to studies conducted by Koç Yildirim S et al [11] and Sharquie KE et al [12], i.e., 92.1% and 92.3%, respectively. The increased incidence of TE among women could be due to cosmetic concerns, and because they have longer hair, they may detect hair thinning earlier and visit clinics sooner than men.

52 instances of acute TE with post-COVID-19 pneumonia were included in our study. Of them, 15 cases (28.84%) had severe COVID-19 pneumonia, 28 (53.84%) exhibited moderate COVID-19 pneumonia, and 9 (17.30%) experienced mild illness. In their study of telogen effluvium, Sharquie KE et al [12] discovered that 38.46% of patients exhibited COVID-19 moderate symptoms. According to their analysis, 61.53 percent of the cases showed moderate symptoms, which is consistent with our study's findings.

Within 2-3 months of recovering from COVID-19 infection, all patients in our study developed excessive hair loss, which was comparable to the findings of the studies by Koç Yildirim S et al [11] and Sharquie KE et al [12], i.e., 2-3 months, respectively.

The hair pull test was positive in 47 of 52 cases, accounting for 90.38% of the cases in our study. These findings were very similar to those of Mishra et al. [9], who reported positive hair pull test results in 97.2% of cases.

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 01, 2023

In our study, a diffuse pattern of alopecia was the most prevalent pattern, occurring in 69.23% of patients. 43.58 percent of the patients in the study by Sharquie KE et al. [12] had such a diffuse pattern.

The majority of the patients with low serum Vitamin B-12 levels were found in 38 cases, or 73.03 percent, of the 52 telogen effluvium cases in our study. Vitamin B12 deficiency and hair loss are inextricably linked, and its significance in COVID-19 disease is currently receiving special consideration. One of the nutrients that people with covid-19 must consume is vitamin B12. Because vitamin B12 is involved in numerous bodily functions and is influenced by numerous clinical conditions that are known to be at risk based on COVID-19 results, it is necessary to determine the vitamin B12 status in COVID-19 patients [13, 14].

To treat the COVID-19 infection, Doxycycline and steroids were given to every patient in our study; Remdesivir and Enoxaparin were given to treat the infection in 71.15 percent of cases overall. Twenty-five instances received oxygen inhalation therapy. Only 15 (28.84%) instances were reported to have used favipiravir. Favipiravir and steroids were used in all instances in the study by Mishra et al. [8], which was also an Indian study. Doxycycline was used in 69.4 percent of cases, Remdesivir in 66.6 percent of cases, and Heparin in 66.6 percent of cases. The three patients reported by Rizzetto et al. [15] were all treated with Enoxaparin throughout their hospitalization, which may obscure the causal relationship between anticoagulants like heparin and TE. TE induced by medications used to treat COVID-19 should be considered in these cases, though this association has not previously been reported.

Patients with pre-existing TE have reportedly experienced worsened hair loss associated with the increased psychosocial stress induced by mandated quarantine. Psychological and emotional stressors are known triggers for TE, so they may contribute to the new onset of TE seen in COVID-19 patients. As our sample size is limited, we are unable to definitively determine a causal relationship between COVID infection and TE.

CONCLUSION:

Previous research found that the majority of COVID-19-related TE cases occur in patients with severe infection; however, our findings suggest that this phenomenon may also occur in patients with mild to moderate COVID-19 infections. This is of particular relevance for dermatologists practicing in communities greatly affected by COVID-19. Patients should be educated about the growing evidence of a causal link between TE and COVID-19 infection as well as reassured about the self-limiting nature of the disease. The relationship between telogen effluvium and COVID19 is still being studied, and more research is needed to determine a causal relationship.

Funding: The author(s) received no financial support for the research, authorship, and/or publication of this article.

COI: We have no conflicts of interest to disclose.

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 01, 2023

Authors Contribution:

Dr. A. Vijaya Kumari and Dr. R. Sreenivasulu Naik performed the research. The research study was designed by Dr. A. Vijaya Kumari and Dr. G. Bharathi. Dr. A. Vijaya Kumari, Dr. R. Sreenivasulu Naik, and Dr. P. Sravani collected, processed, analyzed, and interpreted the data. The paper was drafted by Dr. A. Vijaya Kumari and Dr. P. Sravani. Dr. G. Bharathi performed the critical review. All authors read and approved the manuscript.

REFERENCES:

1. Galván Casas C, Català A, Carretero Hernández G, Rodríguez-Jiménez P, Fernández-Nieto D, Rodríguez-Villa Lario A et al. Classification of the cutaneous manifestations of COVID-19: a rapid prospective nationwide consensus study in Spain with 375 cases. Br J Dermatol. 2020 Jul;183(1): 71-77. doi: 10.1111/bjd.19163..
2. Domínguez-Santás M, Haya-MartínezL,Fernández-Nieto D, Jiménez-Cauhé J, Suárez-ValleA, Díaz-Guimaraens B. Acute telogeneffluviumassociated with SARS-CoV-2 infection. Aust J Gen Pract 2020;49 Suppl 32. doi: 10.31128/AJGPCOVID-32.
3. Rizzetto G, Diotallevi F, Campanati A,Radi G, Bianchelli T, Molinelli E, et al. Telogen effluvium related to post severe Sars-Cov-2infection: Clinical aspects and our management experience. Dermatologic Therapy. 2021;34: e14547. https://doi.org/10. 1111/dth.14547
4. Inamadar AC. Covid induced telogen effluvium (CITE): An insight. Indian Dermatol Online J 2022;13:445-8.
5. Rossi A, Magri F, Sernicola A, Michelini S, Caro G, Muscianese M et al. Telogen Effluvium after SARS-CoV-2 Infection: A Series of Cases and Possible Pathogenetic Mechanisms. Skin Appendage Disord. 2021 Jul 8;21(5):1-5. doi: 10.1159/000517223.
6. Headington JT. Telogen effluvium. New concepts and review. Arch Dermatol. 1993 Mar;129(3):356-63. doi: 10.1001/archderm.129.3.356..
7. Cline A, Kazemi A, Moy J, Safai B, Marmon S. A surge in the incidence of telogen effluvium in minority predominant communities heavily impacted by COVID-19. J Am Acad Dermatol. 2021 Mar;84(3):773-775. doi: 10.1016/j.jaad.2020.11.032.
8. Kutlu Ö, Metin A. Relative changes in the pattern of diseases presenting in dermatology outpatient clinic in the era of the COVID-19 pandemic. DermatolTher. 2020 Nov;33(6):e14096. doi: 10.1111/dth.14096.
9. Mishra, A.; Dubey, A. K.; Pandya, A.Telogen Effluvium as Sequela of COVID-19 in Patients from Central India: A Retrospective Observational Study. International Journal of Pharmaceutical and Clinical Research; 14(7):163-167, 2022.
10. Babaei K, Kavoussi H, Rezaei M, Kavoussi R. Characteristics of telogen effluvium in COVID-19 in western Iran(2020). An Bras Dermatol. 2021;96:688---92.

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 01, 2023

11. KoçYıldırım S, Erbağcı E, DemirelÖğüt N. Evaluation of patients with telogen effluvium duringthe pandemic: May the monocytes be responsible for post COVID -19 telogen effluvium? J Cosmet Dermatol.2022;21:1809–1815. doi:10.1111/jocd.14883.
12. Sharquie KE, Jabbar RI. COVID-19 infection is a major cause of acute telogen effluvium. Ir J Med Sci. 2022 Aug;191(4):1677-1681. doi: 10.1007/s11845-021-02754-5.
13. Batista KS, Cintra VM, Lucena PAF, Manhães-de-Castro R, Toscano AE, Costa LP, et al. The role of vitamin B12 in viral infections: a comprehensive review of its relationship with the muscle-gut-brain axis and implications for SARS-CoV-2 infection. Nutr Rev. 2022 Feb 10;80(3):561-578. doi: 10.1093/nutrit/nuab092.
14. Alshammari, E. (2020). Vitamin B12 Deficiency in COVID-19 Recovered Patients: Case Report. Journal of Pharmaceutical Research, 13, (09752366); 13(1):482-485, 2021.
15. Rizzetto G, Diotallevi F, Campanati A, Radi G, Bianchelli T, Molinelli E et al.Telogen effluvium related to post severe Sars-Cov-2 infection: Clinical aspects and our management experience. DermatolTher. 2021 Jan;34(1):e14547. doi: 10.1111/dth.14547.