

# Comparison of Telogen Effluvium Incidence in Hospitalized and Outpatient Settings after Recovery from COVID-19

Dear Editor

Hair loss, which is known as telogen effluvium (TE), was reported in COVID-19 patients both during and after their recovery.<sup>1-3</sup> Acute TE is characterized as the loss of more than 100 hairs per day and typically develops three months after recovery.<sup>4</sup> TE was found to occur right away after contracting COVID-19.<sup>5</sup> Thus, a comparative study was conducted to determine the incidence of TE between hospitalized and outpatient groups.

This case-control study was conducted on patients who had positive COVID-19 polymerase chain reaction (PCR) tests and were referred to Al-Zahra Teaching Hospital, affiliated with Isfahan University of Medical Sciences (Isfahan, Iran) from May 2021 to August 2021. The study was approved by the Ethics Committee of Isfahan University of Medical Sciences (code: IR.MUI.MED.REC.1400.640). In this study, 370 patients with no prior history of hair loss were enrolled and divided into two groups of 185. We only included the patients who were between 25 and 55 years old. Written informed consent was obtained from all the participants.

Four months following their first positive PCR test, patients' hair complications were evaluated. After clinical and laboratory evaluations, patients with hair loss, anemia, hypothyroidism, and other disorders causing hair loss, such as androgenetic alopecia, alopecia areata, and lichen planopilaris, were excluded. Patients who had positive hair pull tests were considered to have acute TE.

The participants' demographic data, including age and sex, were recorded. Then, the correlation between TE and each of the potential causes of hair loss, such as hospitalization, age, and sex was investigated. Data were analyzed using IBM SPSS Statistics software version 22 (IBM SPSS Inc., Chicago, IL, USA). To summarize the findings of the study, percentages, and frequencies were used. Moreover, *t* test and Chi square test were used to assess the relationship between the variables. Out of 185 hospitalized patients, 40 (21.6%) were diagnosed with TE. In the outpatient group, 57 (30.8%) patients with TE were identified. The difference in the occurrence of TE between the two groups was statistically significant ( $P=0.04$ ).

Hair loss occurrence was investigated by sex and age. There was no significant difference between hair loss occurrence and sex ( $P=0.95$ ). However, there was a significant relationship between hair loss and age ( $P=0.001$ ). The mean age of the participants was  $41.87\pm 12.808$ . TE occurred in 48 (49.5%) and 49 (50.5%) of men and women, respectively ( $P=0.95$ ). TE was found in 97 (26%) of the patients, with a mean age of  $36.57\pm 11.401$  years. On the other hand, 273 (74%) of the patients, who had a mean age of  $43.76\pm 12.769$ , did not experience hair loss. There was a significant difference between the two groups ( $P=0.001$ ).

TE is the most common cause of hair loss, which can be diagnosed through a medical history and examination.<sup>4</sup> Previous studies reported the early occurrence of TE in contrast to the usual occurrence of TE, which is earlier than three months.<sup>5</sup> Since the COVID-19 pandemic, daily death rates and anxiety have led to stressful conditions for the patients. As the disease is new, studying the disease and its short-term and long-term complications can accelerate the treatment and control process.

Until now, no comparative study has been conducted to evaluate the occurrence of TE in inpatients versus outpatients. The findings of the present study indicated that the occurrence of TE was higher in outpatients than inpatients. In the present study, there was no correlation between sex and the occurrence of TE. However, there was a significant correlation between age and the occurrence of TE.

This study was conducted in two groups with an equal number of patients. However, none of the

previous studies compared outpatients and inpatients at the same time with an equal number of participants. In addition, the statistical population was selected from patients with TE, and it is possible that individuals who presented with complications of hair loss were more vulnerable to hair loss. Therefore, it cannot accurately represent the true occurrence of TE in all recovered patients.

TE is one of the early complications occurring after recovery from COVID-19, which leads to patients' anxiety and compels them to investigate the cause of this complication. According to the findings of this study, the occurrence of TE among outpatients is higher than in hospitalized patients. Consequently, it could be inferred that other variables than the severity of the disease cause post-COVID-19 TE. Therefore, further studies are required to evaluate the pathogenesis of this complication.

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## Authors' Contribution

A.A: Data analysis and writing the manuscript, P.M: Patients follow-up and writing the manuscript, F.I conceptualized the study and edited the manuscript and S.M.H performed the statistical analysis and edited the manuscript. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

**Conflict of Interest:** None declared.

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