LETTER TO THE EDITOR
DOI: 10.4274/tjh.galenos.2025.2025.0102

Hair Re-Pigmentation After Nilotinib

Öznur Aydın[1], Mehmet Turgut[2]
[1]Samsun University Faculty of Medicine, Department of Internal Medicine, Samsun, Türkiye
[2]Ondokuz Mayıs University Faculty of Medicine, Department of Internal Medicine, Division of Hematology, Samsun, Türkiye

Öznur Aydın, M.D., Samsun University Faculty of Medicine, Department of Internal Medicine, Samsun, Türkiye
oznur.aydin@samsun.edu.tr

March 17, 2025
April 21, 2025

Hair pigmentation in humans is caused by melanin, a pigment produced by melanocytes in the hair follicle. The type and amount of melanin—eumelanin (black/brown) and pheomelanin (red/yellow)—determine hair color. As we age, melanin production decreases, leading to gray or white hair. While hair graying is commonly associated with aging, genetic factors, stress, drugs and nutritional deficiencies can also accelerate the process. (1). Drugs usually cause hypopigmentation in hair, but in rare cases, some medications can induce re-pigmentation or hyperpigmentation. We are presenting our case of chronic myeloid leukemia (CML), where the hair returned to its original color after treatment, as it is a rare occurrence.
A 62-year-old male patient was diagnosed with chronic myeloid leukemia in December 2020. The patient also has a history of hypertension and chronic obstructive pulmonary disease. Initially, the patient was treated with imatinib for CML. The patient achieved molecular response with 400 mg of imatinib; however, due to frequent hospitalizations for shortness of breath and edema, and based on the recommendation of the pulmonology department, imatinib treatment was discontinued in August 2022. Bosutinib was started, but due to lack of response after approximately one year, bosutinib was discontinued. In September 2023 nilotinib was initiated. After six months of nilotinib therapy (in March 2024), the patient noticed a change in hair color with gradual reversal from gray to the original shade.

Drug-induced hyperpigmentation or re-pigmentation of original hair color that may occur with minoxidil, oral retinoids, hormonal therapies, targeted immunotherapies or immunomodulatory drugs. A systematic review of these drugs reported more than 130 cases of drug-induced gray hair re-pigmentation (2). The study noted that although many of these drugs have been used by millions of patients, only a small minority experienced hair re-pigmentation. The study also pointed out that this might be due to the lack of reported cases, or the unclear mechanisms involved (2).
Hair color changes related to nilotinib and imatinib have been rarely reported in the literature. (3,4). In a retrospective study of patients with CML treated with imatinib, 7% of the 133 patients experienced re-pigmentation of gray hair between the 2nd and 14th months of treatment (4). The exact mechanism through which tyrosine kinase inhibitors affect hair pigmentation remains unknown. In our case, the patient has a history of using both imatinib and nilotinib. Since hair re-pigmentation occurred after the initiation of nilotinib, it is considered to be associated with nilotinib. However, given that most of the data on this topic come from case reports with a limited number of patients, the overall level of evidence remains low. More meaningful data may be obtained as additional cases are reported over time.

References
1. Kumar AB, Shamim H, Nagaraju U. Premature Graying of Hair: Review with Updates. Int J Trichology. 2018 Sep-Oct;10(5):198-203. doi: 10.4103/ijt.ijt_47_18. PMID: 30607038; PMCID: PMC6290285.
2. Yale K, Juhasz M, Atanaskova Mesinkovska N. Medication-Induced Repigmentation of Gray Hair: A Systematic Review. Skin Appendage Disord. 2020 Jan;6(1):1-10. doi: 10.1159/000504414. Epub 2019 Dec 17. PMID: 32021854; PMCID: PMC6995950.
3. Kockerols CCB, Westerweel PE. Hair Repigmentation Induced by Nilotinib. N Engl J Med. 2022 Aug 11;387(6):e12. doi: 10.1056/NEJMicm2119953. Epub 2022 Aug 6. PMID: 35929831.

4. Etienne G, Cony-Makhoul P, Mahon FX. Imatinib mesylate and gray hair. N Engl J Med. 2002 Aug 8;347(6):446. doi: 10.1056/NEJM20020808347061PMID: 12167692.

Figure 1. Patient's hair color before nilotinib

Figure 2. Patient's hair color after nilotinib