Alopecia Areata following COVID-19 Vaccine

Andrew Takla  
*Rochester Regional Health System*, andrew.takla@rochesterregional.org

Omar AlAli  
*Rochester Regional Health System*, Omar.AlAli@rochesterregional.org

Mostafa Zaalouk  
*Rochester Regional Health System*, mostafa.zaalouk@rochesterregional.org

Soon-IL Song  
*Rochester Regional Health System*, soon-il.song@rochesterregional.org

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**Recommended Citation**


**ISSN:** 2769-2779

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Conflict of Interest Statement

None
Alopecia areata is a chronic, relapsing, immune-mediated disorder that affects hair follicles, leading to a non-scarring pattern of hair loss. Its prevalence is estimated to be approximately 2% of the population. The pathophysiology of alopecia areata involves a T cell-mediated autoimmune response that disrupts the normal hair follicle growth cycle, prematurely transitioning hair follicles from the growth phase (anagen) to the non-proliferative involution (catagen) and resting (telogen) phases. This process leads to sudden hair shedding and inhibits hair regrowth.

During the pandemic, there has been a significant rise in the incidence of alopecia areata, with a prevalence rate of 7.8%. This surge may be associated with various factors, including COVID-19 infection, vaccination, and stress resulting from lockdown measures. COVID-19 vaccines have been identified as potential triggers for a wide range of cutaneous pathologies, likely related to Type I and IV hypersensitivity reactions, particularly in individuals with a genetic predisposition. The onset or worsening of alopecia areata following COVID-19 vaccines has been described in some reports in the literature, and the reported time interval between vaccination and the onset of alopecia areata appears to vary by the type of vaccine used.

We present the case of an otherwise healthy 51-year-old African American man with progressive diffuse hair loss, which started 10 days after receiving the second dose of the Pfizer-BioNTech COVID-19 vaccine (BNT162b2). The patient reported symptoms of pruritus and burning of the scalp but denied any rash, nail changes, fever, or systemic symptoms following vaccination. Notably, there has been no involvement of his eyelashes or eyebrows. He had no personal or family history of hair loss, thyroid disease, or rheumatologic disorders. Furthermore, he denied using any prescription medications, anabolic steroids, or over-the-counter supplements. He had been sexually active with one partner in the preceding six months and had no history of sexually transmitted diseases. His vital signs were within the normal range. Physical examination revealed multiple discrete patches of hair loss on the beard, as well as on the occipital, bilateral parieto-temporal, and frontal areas of the scalp, without any associated skin changes such as scarring, hyperkeratosis, or discoloration (Fig. 1). The pull test performed at the periphery of the alopecic patches was positive, with numerous hairs easily being removed. Laboratory investigations, including a complete blood count, iron studies, and thyroid-stimulating hormone, yielded results within normal limits. Treponemal antibody testing was negative. A punch biopsy confirmed the diagnosis of alopecia areata, showing consistent pathology. The patient underwent treatment with an intralesional triamcinolone injection, 2.5 mg/ml, which resulted in...

Fig. 1. Multiple patches of hair loss after receiving COVID-19 vaccine.
Gradual recovery and regrowth of his hair over the subsequent 2 months (see Fig. 2). Initially, 5 ml of the medication was injected intralesionally into the scalp and beard lesions (total of 30 injections), followed by another 1.1 ml in a follow-up visit (7 injections).

The management of alopecia areata depends on the extent of the disease and the rate of hair loss. Topical and intra-lesional corticosteroids are appropriate for limited or patchy hair loss involving less than 50% of the scalp hair. Patients with extensive hair loss involving more than 50% of the scalp hair may benefit from immunomodulatory therapies, such as oral JAK2 inhibitors. Importantly, it is worth noting that most cases of post-COVID vaccine-related alopecia respond well to treatment.

In conclusion, hair loss events related to COVID-19 vaccines are deemed to be rare adverse reactions. They should be acknowledged as potential adverse events attributable to the vaccines for public awareness. Nonetheless, it is worth noting that the benefits of COVID-19 vaccines substantially outweigh the reported risk of alopecia areata and other dermatological conditions.

Author contributions
Writing – original draft (AT, OA), Writing – review and editing (AT, OA, MZ), Validation (AT, SS), Supervision (SS).

Conflicts of interest
The authors do not declare any conflicts of interest.

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