

## CLINICAL VIGNETTE

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# Alopecia Areata after COVID-19 Vaccination

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### Case

A 44-year-old woman presented to dermatology with diffuse shedding of scalp hair. She recently received Johnson & Johnson COVID vaccine and hair shedding started two days later. She noticed bald patches on the scalp and thinks she might be losing eyebrows and eyelashes as well. Affected areas are asymptomatic. She denied any new medications or any recent infections. Her past medical history is significant for multiple sclerosis. Her family history is significant for thyroid disorder in mother and grandmother.

On physical exam, the patient had patches of alopecia on the scalp. There was no erythema, scales, or scarring. Trichoscopy revealed exclamation point hairs.

She was diagnosed with alopecia areata based on history and physical exam and was started on intralesional triamcinolone injections to the scalp. However, her hair loss continued to progress rapidly. Four months after her initial presentation, she had lost almost all of her scalp hair. She declined further treatment and was subsequently lost to follow up.

### Discussion

Alopecia areata is a hair-specific autoimmune condition that results in non-scarring hair loss.<sup>1</sup> Patients commonly present with patches of non-scarring bald spots on the scalp. It can also affect hairs in other parts of the body including eyebrows, eyelashes, and beard for men. In its most severe form, alopecia universalis, there is complete loss of scalp and body hair.

The immune cells in alopecia areata target hair follicles in the anagen growth phase, causing them to transition to shedding/resting catagen and telogen phases. The hair follicles remain viable and once inflammation resolves, hairs usually regrow. The condition is chronic and many patients experience remissions and relapses.

The prevalence of alopecia areata in the United States is 0.1-0.2%.<sup>1</sup> As with other autoimmune conditions, both genetic and environmental factors appear to play a role. A twin study, among monozygotic twins, both twins had alopecia areata in 42 percent of twin pairs.<sup>2</sup> However, dizygotic twins, had alopecia areata in only 10 percent of twin pairs. Another study of 206 patients with alopecia areata, 20 percent had a first-degree relative with the same disease.<sup>3</sup> In genetically-predisposed individuals, a stressor is thought to trigger loss of immune

privilege, leading to expression of major histocompatibility complex class I polypeptide-related sequence A on hair follicle cells.<sup>4</sup> This leads to activation of immune cells which infiltrate around and sometimes within the hair bulb region of anagen hair follicles, leading to hair shedding.

A detailed history and physical exam are usually sufficient for diagnosing alopecia areata. Our patient displayed patches of nonscarring alopecia on the scalp. Close inspection revealed exclamation point hairs, which is a pathognomonic finding of alopecia areata.<sup>1</sup>

Since the COVID-19 pandemic started, there are reports of alopecia areata appearing after COVID-19 infection or COVID-19 vaccine.<sup>5-9</sup> Scollan et al. published a case series of nine patients who either developed alopecia areata or whose existing alopecia areata worsened after COVID-19 vaccine.<sup>6</sup> The onset of alopecia areata started as early as 2 weeks after the first dose and up to 4 months after completing vaccines. Six of the nine patients experienced hair loss within one month. Another study, reported 84% of hair loss occurred within one month of vaccination.<sup>10</sup> Our patient's hair loss started two days after her Johnson & Johnson COVID-19 vaccine, strongly suggesting this was the trigger for her alopecia areata. Other vaccines that reported to trigger alopecia areata include hepatitis B, herpes zoster, Clostridium tetani, Japanese encephalitis, and human papillomavirus.<sup>11,12</sup>

Patients who develop alopecia areata after COVID-19 vaccine often have personal or family history of autoimmune conditions. Our patient has a history of multiple sclerosis. She also has a family history of thyroid disease. Therefore, she likely has a strong genetic predisposition, and her alopecia areata was then triggered by COVID-19 vaccine.

In patients with limited disease, intralesional corticosteroids are the preferred first-line therapy.<sup>13</sup> Small volumes of corticosteroids are injected into alopecia patches, usually about 1 centimeter apart. The treatment is repeated every four to six weeks until regrowth is complete. Topical immunotherapy is another option for patients with limited disease. This treatment involves applying a contact allergen to the scalp to stimulate hair regrowth. The inflammation produced by the contact dermatitis likely works through an immunomodulatory effect. In patients with rapid progression of hair loss, systemic glucocorticoids can be used to halt hair loss and promote regrowth.

However, patients usually relapse after discontinuation of systemic steroids. Other systemic therapies are emerging as treatment options for patients with severe alopecia areata. These include oral Janus kinase inhibitors, methotrexate, azathioprine, sulfasalazine, and cyclosporine. Our patient experienced rapid progression of hair loss, leading to almost complete loss of scalp hair four months after onset. She failed intralesional kenalog injections. Other treatment options, including systemic therapies, were discussed with her. However, the patient was not interested and was subsequently lost to follow up.

Since the wide distribution of COVID-19 vaccines, various side effects and complications have been reported. This case illustrates that COVID-19 vaccine can trigger alopecia areata in genetically-predisposed individuals. It is important for clinicians to be aware of this so they can identify the condition and refer patients to dermatology promptly for evaluation and treatment.

## REFERENCES

1. **Strazzulla LC, Wang EHC, Avila L, Lo Sicco K, Brinster N, Christiano AM, Shapiro J.** Alopecia areata: Disease characteristics, clinical evaluation, and new perspectives on pathogenesis. *J Am Acad Dermatol.* 2018 Jan;78(1):1-12. doi: 10.1016/j.jaad.2017.04.1141. PMID: 29241771.
2. **Rodriguez TA, Fernandes KE, Dresser KL, Duvic M; National Alopecia Areata Registry.** Concordance rate of alopecia areata in identical twins supports both genetic and environmental factors. *J Am Acad Dermatol.* 2010 Mar;62(3):525-7. doi: 10.1016/j.jaad.2009.02.006. PMID: 20159328.
3. **Blaumeiser B, van der Goot I, Fimmers R, Hanneken S, Ritzmann S, Seymons K, Betz RC, Ruzicka T, Wienker TF, De Weert J, Lambert J, Kruse R, Nöthen MM.** Familial aggregation of alopecia areata. *J Am Acad Dermatol.* 2006 Apr;54(4):627-32. doi: 10.1016/j.jaad.2005.12.007. Epub 2006 Jan 23. PMID: 16546583.
4. **Rajabi F, Drake LA, Senna MM, Rezaei N.** Alopecia areata: a review of disease pathogenesis. *Br J Dermatol.* 2018 Nov;179(5):1033-1048. doi: 10.1111/bjd.16808. Epub 2018 Sep 9. PMID: 29791718.
5. **Sgubbi P, Savoia F, Calderoni O, Longo R, Stinchi C, Tabanelli M.** Alopecia areata in a patient with SARS-Cov-2 infection. *Dermatol Ther.* 2020 Nov;33(6):e14295. doi: 10.1111/dth.14295. Epub 2020 Sep 21. PMID: 32909635.
6. **Fivenson D.** COVID-19: association with rapidly progressive forms of alopecia areata. *Int J Dermatol.* 2021 Jan;60(1):127. doi: 10.1111/ijd.15317. Epub 2020 Nov 23. PMID: 33226118; PMCID: PMC7753616.
7. **Rossi A, Magri F, Michelini S, Caro G, Di Fraia M, Fortuna MC, Pellacani G, Carlesimo M.** Recurrence of alopecia areata after covid-19 vaccination: A report of three cases in Italy. *J Cosmet Dermatol.* 2021 Dec;20(12):3753-3757. doi: 10.1111/jocd.14581. Epub 2021 Nov 6. PMID: 34741583.
8. **Essam R, Ehab R, Al-Razzaz R, Khater MW, Moustafa EA.** Alopecia areata after ChAdOx1 nCoV-19 vaccine (Oxford/AstraZeneca): a potential triggering factor? *J Cosmet Dermatol.* 2021 Dec;20(12):3727-3729. doi: 10.1111/jocd.14459. Epub 2021 Sep 24. PMID: 34559937; PMCID: PMC8661988.
9. **Scollan ME, Breneman A, Kinariwalla N, Soliman Y, Youssef S, Bordone LA, Gallitano SM.** Alopecia areata after SARS-CoV-2 vaccination. *JAAD Case Rep.* 2022 Feb;20:1-5. doi: 10.1016/j.jdc.2021.11.023. Epub 2021 Dec 15. PMID: 34931171; PMCID: PMC8673931.
10. **Wise RP, Kiminyo KP, Salive ME.** Hair loss after routine immunizations. *JAMA.* 1997 Oct 8;278(14):1176-8. PMID: 9326478.
11. **Simakou T, Butcher JP, Reid S, Henriquez FL.** Alopecia areata: A multifactorial autoimmune condition. *J Autoimmun.* 2019 Mar;98:74-85. doi: 10.1016/j.jaut.2018.12.001. Epub 2018 Dec 15. PMID: 30558963.
12. **Wraith DC, Goldman M, Lambert PH.** Vaccination and autoimmune disease: what is the evidence? *Lancet.* 2003 Nov 15;362(9396):1659-66. doi: 10.1016/S0140-6736(03)14802-7. PMID: 14630450.
13. **Messenger AG, McKillop J, Farrant P, McDonagh AJ, Sladden M.** British Association of Dermatologists' guidelines for the management of alopecia areata 2012. *Br J Dermatol.* 2012 May;166(5):916-26. doi: 10.1111/j.1365-2133.2012.10955.x. PMID: 22524397.