CLINICAL AND EXPERIMENTAL VACCINE RESEARCH

Clin Exp Vaccine Res 2022;11:129-132
https://doi.org/10.7774/cevr.2022.11.1.129
pISSN 2287-3651 • eISSN 2287-366X

Alopecia areata after COVID-19 vaccination

Giuseppe Gallo, Luca Mastorino, Luca Tonella, Simone Ribero, Pietro Quaglino
Dermatology Unit, Department of Medical Sciences, University of Turin, Turin, Italy

Received: September 7, 2021
Revised: October 25, 2021
Accepted: November 11, 2021

Corresponding author: Giuseppe Gallo, MD
University of Turin, Via Cherasco 23, Turin, Italy
Tel: +39-0116335843, Fax: +39-0116335240
E-mail: peppusmagnus@hotmail.it

No potential conflict of interest relevant to this article was reported.

The coronavirus disease 2019 (COVID-19) vaccines are authorized for use in numerous countries worldwide. Several cutaneous findings are reported after severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) vaccination. Here, we report the case of a patient with a rapid onset of alopecia areata immediately after receiving the second dose of the COVID-19 vaccine. Alopecia areata is a common autoimmune disease leading to non-scarring hair loss. Among the many cutaneous adverse effects reported after the anti-SARS-COV2 vaccination, no episodes of alopecia areata have been described to date. In this paper, we report the first case of alopecia areata after COVID-19 vaccination described in the literature with a revision of cases of alopecia areata reported after other types of vaccination. Although the significance of these skin reactions is not yet known, further studies will certainly clarify whether the development of alopecia areata or other forms of immune-mediated reactions could represent a positive prognostic factor regarding immune protection from SARS-CoV-2.

Keywords: Alopecia areata, Vaccine, COVID-19, Trichoscopy

Introduction

Alopecia areata is a common autoimmune disease leading to non-scarring hair loss [1]. In the last year, there have been reported numerous cutaneous manifestations due to coronavirus disease 2019 (COVID-19), among these acute telogen effluvium [2] and alopecia areata can be encountered [3-5]. Cases of alopecia areata seem increased during the pandemic although it is not yet known whether the correlation is related to subclinical infections in COVID-19 or to increased stressful conditions related to lockdown and quarantine [5,6]. Several skin manifestations have already been reported as a consequence of the vaccines (the Pfizer-BioNTech COVID-19 vaccine, the Moderna COVID-19 vaccine, the AstraZeneca vaccine) against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [7-9], but no case of vaccine-induced alopecia areata has been described so far.

Case Report

Here, we present a case of a 31-year-old Caucasian healthcare man who presented at the outpatient consultation of hair diseases of dermatology of the University of Turin for intense hair loss (approximately 100–150 hairs per day) and appearance of numer-

ous patches of alopecia. The patient had recently undergone Pfizer COVID-19 vaccination (Pfizer, New York, NY, USA): he had received the second dose 3 weeks before the visit and reported that hair loss and the onset of lesions occurred the day after this injection. No autoimmune diseases, hypersensitivity reactions to previous vaccines, and family history of alopecia were known. Neither fever nor illness nor any other systemic reactions were reported following the vaccination. Three weeks after the administration of the second dose of the vaccine, the patient presented to our dermatologic service with multiple circular patches of alopecia on the occipital, bilateral parieto-temporal, and frontal areas, with involvement of the beard (Fig. 1). The patient reported occasional episodes of itching at the patches. The pull test performed on the periphery of the alopecia patches was positive with numerous hairs removed. Trichoscopy showed yellow-dots, black dots, dystrophic hair, and vellus hairs in the center and periphery of the patches (Fig. 2). Blood tests showed normal blood count, normal hepato-renal and thyroid function, negative autoimmunity, negative VDRL/TPHA (Venereal Disease Research Laboratory/Treponema pallidum hemagglutination) to exclude autoimmune or infectious diseases. The clinical and trichoscopic pictures confirmed the diagnosis of alopecia areata.

Fig. 1. Multiple patches of alopecia areata involving the temporo-parietal (A), occipital (B), and vertex areas (C). Patches of alopecia areata involving the beard (D). Written informed consent for publication of this image was obtained from the patient.

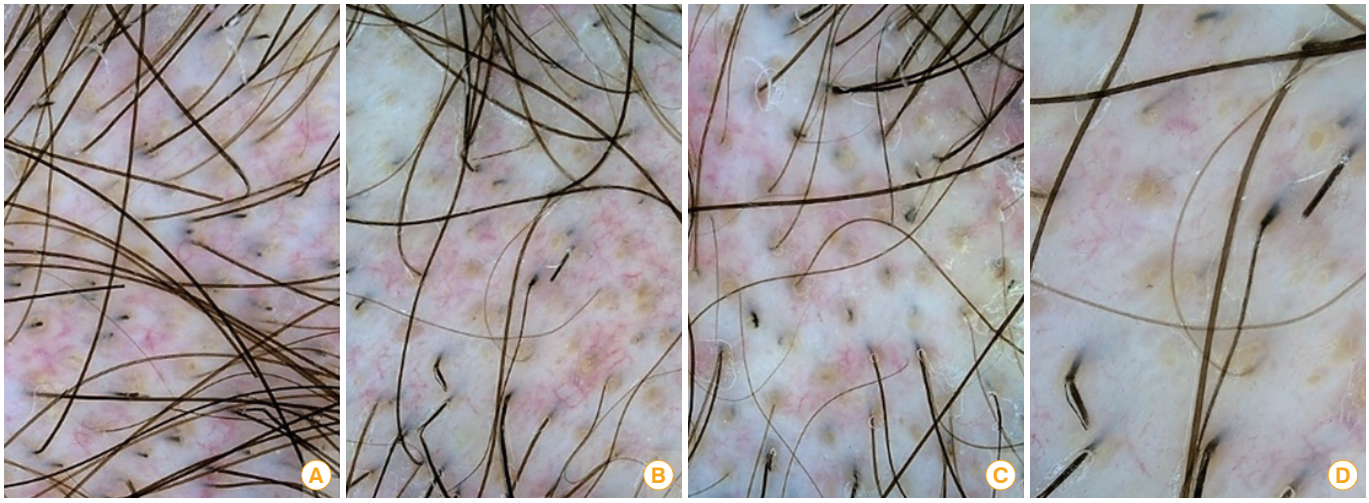

Fig. 2. Trichoscopic pictures showing yellow dots, black dots, dystrophic hairs, and vellus hairs performed at the periphery (A) and center (B–D) of alopecia patches (×10–×50; FotoFinder Dermoscope; Germany). Written informed consent for publication of this image was obtained from the patient.

 https://doi.org/10.7774/cevr.2022.11.1.129

The patient provided written informed consent for publication of the research details.

Discussion

Few cases of alopecia areata occurring after tetanus, hepatitis B, and smallpox vaccines have been reported in the literature [10,11]. A single case of alopecia areata after ChAdOx1 nCoV-19 vaccine (Oxford/AstraZeneca, Cambridge, UK) has been reported [12]. In our paper, we report the first case of alopecia areata related to Pfizer anti-SARS-CoV-2 vaccination. No cases of alopecia areata or hair disorders have been reported after mRNA new-generation vaccine or among the adverse events reported in clinical trials on Pfizer and Moderna (Cambridge, MA, USA) vaccines. Among the skin adverse events, pain, redness or swelling at the site of vaccine shot, urticaria, papulovesicular, pityriasis rosea-like and morbilliform eruptions are described [7-9,13]. A recent paper reported a mild, self-limiting morbilliform skin rash 24 hours after the first dose of Pfizer-BioNTech COVID-19 vaccine and a more extensive and long-lasting morbilliform rash 48 hours after the second dose [14]. Our patient showed hair loss immediately after the booster dose suggesting a pathophysiological association between vaccination and subsequent alopecia areata. To date, there is no conclusive evidence to prove a causal relationship, but the concept that no drug is completely harmless can also be applied to vaccines, which certainly play an important role in improving human health, but could be implicated as potential triggers for autoimmune diseases [15]. For both the morbilliform reaction and cases of alopecia areata, an immune-mediated etiology can be hypothesized, suggesting a more robust immune response that could trigger these manifestations in genetically predisposed patients [12,14,15]. The significance of these skin reactions is not yet known but further studies will certainly be needed to clarify whether the development of alopecia areata or other forms of immune-mediated reactions represent a positive prognostic factor regarding immune protection from SARS-CoV-2.

ORCID

Giuseppe Gallo *https://orcid.org/0000-0001-8390-4467*
Luca Mastorino *https://orcid.org/0000-0001-7386-3219*
Luca Tonella *https://orcid.org/0000-0001-6790-554X*
Simone Ribero *https://orcid.org/0000-0002-0098-1406*
Pietro Quaglino *https://orcid.org/0000-0003-4185-9586*

References

1. Strazzulla LC, Wang EHC, Avila L, et al. Alopecia areata: disease characteristics, clinical evaluation, and new perspectives on pathogenesis. J Am Acad Dermatol 2018;78:1-12.
2. Moreno-Arrones OM, Lobato-Berezo A, Gomez-Zubiaur A, et al. SARS-CoV-2-induced telogen effluvium: a multicentric study. J Eur Acad Dermatol Venereol 2021;35:e181-3.
3. 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;33:e14295.
4. Capalbo A, Giordano D, Gagliostro N, et al. Alopecia areata in a COVID-19 patient: a case report. Dermatol Ther 2021;34:e14685.
5. Berbert Ferreira S, Gavazzoni Dias M, Berbert Ferreira R, Neves Neto AC, Trueb RM, Lupi O. Rapidly progressive alopecia areata totalis in a COVID-19 patient, unresponsive to tofacitinib. J Eur Acad Dermatol Venereol 2021;35:e411-2.
6. FIvenson D. COVID-19: association with rapidly progressive forms of alopecia areata. Int J Dermatol 2021;60:127.
7. Meo SA, Bukhari IA, Akram J, Meo AS, Klonoff DC. COVID-19 vaccines: comparison of biological, pharmacological characteristics and adverse effects of Pfizer/BioNTech and Moderna vaccines. Eur Rev Med Pharmacol Sci 2021;25:1663-9.
8. McMahon DE, Amerson E, Rosenbach M, et al. Cutaneous reactions reported after Moderna and Pfizer COVID-19 vaccination: a registry-based study of 414 cases. J Am Acad Dermatol 2021;85:46-55.
9. Catala A, Munoz-Santos C, Galvan-Casas C, et al. Cutaneous reactions after SARS-CoV-2 vaccination: a cross-sectional Spanish nationwide study of 405 cases. Br J Dermatol 2021 Jul 13 [Epub]. https://doi.org/10.1111/bjd.20639.
10. Wise RP, Kiminyo KP, Salive ME. Hair loss after routine immunizations. JAMA 1997;278:1176-8.
11. Sanchez-Ramon S, Gil J, Cianchetta-Sivori M, Fernandez-Cruz E. Alopecia universalis in an adult after routine tetanus toxoid vaccine. Med Clin (Barc) 2011;136:318.
12. 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;20:3727-9.
13. Lopez-Valle A, Falkenhain-Lopez D, Arranz CR. Cutane-

ous reaction to BNT162b2 mRNA COVID-19 vaccine. Int J Dermatol 2021;60:891-2.
14. Jedlowski PM, Jedlowski MF. Morbilliform rash after administration of Pfizer-BioNTech COVID-19 mRNA vaccine. Dermatol Online J 2021;27:13030/qt4xs486zg.
15. Chu CH, Cheng YP, Chan JY. Alopecia areata after vaccination: recurrence with rechallenge. Pediatr Dermatol 2016; 33:e218-9.