

- 29 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.
- 30 Wang C, Rademaker M, Tate B, Baker C, Foley P. SARS-CoV-2 (COVID-19) vaccination in dermatology patients on immunomodulatory and biological agents: Recommendations from the Australasian Medical Dermatology Group. *Australas J Dermatol.* 2021;**62**:151–156.

DOI: 10.1111/jdv.18063

## Transient inflammation in surgical scars following Covid-19 mRNA vaccination

Editor

Since December 2020, extensive vaccination campaigns have been introduced in Europe, using novel messenger ribonucleic acid (mRNA) anti-severe acute respiratory syndrome coronavirus 2 (anti-SARS-CoV-2) vaccines. A wide range of adverse cutaneous events have been reported since the advent of vaccination programmes,<sup>1,2</sup> but to our knowledge, there have been no reports of inflammatory changes occurring on surgical scars or wounds. Very recently, inflammation occurring in Bacille Calmette-Guérin (BCG) scars following mRNA vaccination were observed, both on old scars as well as new ones, as part of a randomized trial evaluating whether BCG protects against Coronavirus disease 2019 (COVID-19).<sup>3,4</sup>

We currently report the occurrence of inflammatory painful reactions, limited to the area of previous surgical procedures, in four otherwise healthy Caucasian patients (Table 1), 24–48 h after the first dose of the novel mRNA anti-SARS-CoV-2 Pfizer-BioNTech vaccine (BNT162b2). Two men and a woman had

very recent scars, the excision having been performed 2–6 weeks before vaccination, while the other woman had surgery 6 months before vaccine injection. The intensity of the reaction varied from local erythematous swelling to bullous formation and purulent discharge, which were very painful even in the milder reactions (Fig. 1).

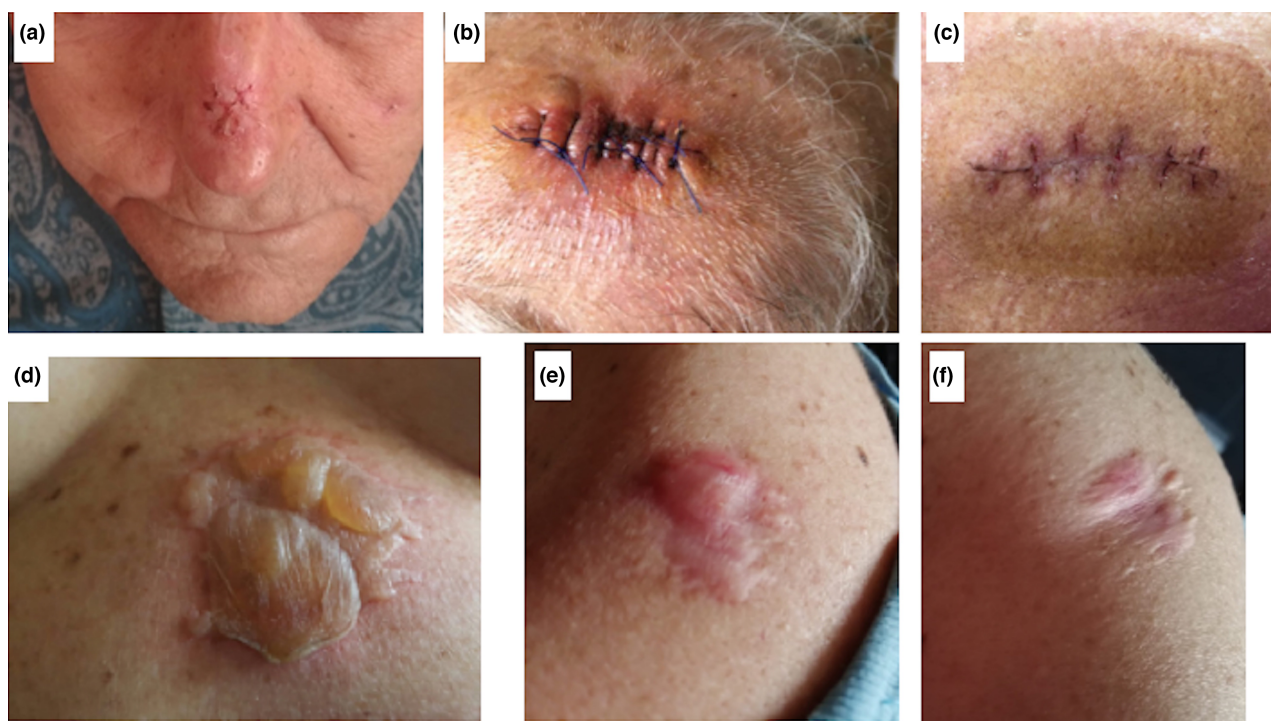
All patients had surgery to remove basal cell carcinomas, radically excised. Consulting the medical charts, the procedure required an internal absorbable vicryl suture in three patients, while in one patient, the reaction occurred before removal of the external suture (prolene). The site of vaccine injection was not affected with inflammatory changes, nor did the patients experience other general or bothersome symptoms. The inflammatory reaction on scars was treated with local mixed antibiotic-corticosteroid cream, resolving within 10–14 days, and left no sequelae. No further reactions occurred following the second dose of the vaccine. The cases were reported to the Italian Pharmacovigilance Authority.

Variable cutaneous reaction patterns have been associated with COVID-19 vaccination, including delayed type IV hypersensitivity reactions to dermal filler injections, inflammatory changes on previous radiation sites and old BCG scars re-activation.<sup>1–4</sup> In our patients, the wound healing or remodelling phase of the surgical scars or the presence of residual suture materials might have stimulated some immunological mechanisms, similar to forms of hypersensitivity reactions. However, due to the self-healing, benign course of the reaction, no other invasive investigations were performed in our patients to clarify the pathogenesis. The observation is reported to the medical community to raise attention and collect further experiences or studies.

In conclusion, dermatologists are actively committed to supporting the Vaccine Adverse Event Reporting System (VAERS) and enhancing continuous safety monitoring.<sup>5</sup> The risk of

**Table 1** Patient data and medical history

Patient sex and age	Surgical scar origin	Clinical manifestations	Treatment	Course
Man, 75 years	Basal cell carcinoma excision on the nose 4 weeks before vaccination	24 h after the injection, deep pain and progressive induration of the scars, erythema and crusting formations.	Mixed antibiotic-steroidal cream twice daily	Complete healing in 4 weeks
Man, 65 years	Basal cell carcinoma excision on the scalp 2 weeks before vaccination	48 h after vaccine injection, severe pain and swelling of the wound, while suture was still in place. Removal of stitches was postponed for another week.	Mixed antibiotic-steroidal cream twice daily	Complete healing in 2 weeks
Woman, 52 years	Basal cell carcinoma excision on the upper abdomen 6 weeks before vaccination	24 h after vaccination, erythema, swelling, followed by bullous formation	Mixed antibiotic-steroidal cream twice daily	Complete healing in 4 weeks
Woman, 40 years	Basal cell carcinoma excision on her right shoulder 6 months before vaccination	24 h after vaccination, sudden painful induration, swelling, followed by purulent discharge on a consolidated scar	Mixed antibiotic-steroidal cream twice daily	Complete healing in 6 weeks



**Figure 1** Scar reactivation on the nose, with erythema and crusting in a 75-year-old man (inset a); sudden swelling of the suture on the scalp in a 65-year-old man (inset b), and resolution without sequelae in 2 weeks (inset c); bullous formation on a recent surgical scars of the abdomen in a 52-year-old woman (inset d); erythematous induration, with granulomatous formation on a consolidated scars of the right shoulder in a 40-year-old woman (inset e), and final scar 6 weeks later (inset f).

inflammation at scar sites should be considered, and inform the patients that although it could be bothersome, it is usually a self-limiting event and not a reason to avoid vaccination. In our experience, the event did not recur at the following vaccination doses.

### Acknowledgement

The patients in this manuscript have given written informed consent to the publication of their case details.

### Conflicts of interest

None of the authors have conflicts of interest to disclose.

### Funding sources

None.

### Author contribution

All authors contributed equally to the manuscript and had the opportunity to revise and approve the final text.

### Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

C. Ferreli,  J. Anedda,  L. Atzori\* 

Dermatology Clinic, Department Medical Sciences and Public Health, University of Cagliari, Cagliari, Italy

\*Correspondence: L. Atzori. E-mail: atzoril@unica.it

### References

- 1 Lopatynsky-Reyes EZ, Acosta-Lazo H, Ulloa-Gutierrez R, Ávila-Aguero ML, Chacon-Cruz E. BCG scar local skin inflammation as a novel reaction following mRNA COVID-19 vaccines in two international healthcare workers. *Cureus* 2021; **13**: e14453.
- 2 Mohamed L, Madsen AMR, Scholtz-Buchholzer F *et al*. Reactivation of BCG vaccination scars after vaccination with mRNA-Covid-vaccines: two case reports. *BMC Infect Dis* 2021; **21**: 1264.
- 3 Gambichler T, Boms S, Susok L *et al*. Cutaneous findings following COVID-19 vaccination: review of world literature and own experience. *J Eur Acad Dermatol Venereol* 2022; **36**: 172–180.
- 4 Niebel D, Novak N, Wilhelmi J *et al*. Cutaneous adverse reactions to COVID-19 vaccines: insights from an immuno-dermatological perspective. *Vaccines (Basel)* 2021; **9**: 944.
- 5 Pulsipher KJ, Presley CL, Waller JD, Szeto MD, Laughter MR, Dellavalle RP. Coronavirus vaccination adverse reactions and the role of the dermatologist. *J Drugs Dermatol* 2021; **20**: 351–352.

DOI: 10.1111/jdv.18088