

Atypical pityriasis rosea associated with mRNA COVID-19 vaccine

To the editor,

Variable dermatological manifestations including acral erythema, urticaria, vasculitis, vesicular or pustular eruptions, maculopapular rash have all been reported during the course of COVID-19.¹ Several vaccines have been developed to fight against COVID-19, to prevent the transmission among susceptible individuals and to decrease the morbidity and mortality associated with this novel viral infection. Even though proven to be quite effective, various cutaneous side effects are now being reported as the vaccination continues to be applied all over the world. Herein, we would like to report an atypical case of pityriasis rosea (PR) observed in a patient after the second dose of the mRNA COVID-19 vaccine.

A 34-year-old woman with unremarkable personal history was referred to our outpatient dermatology clinic, due to the emergence of a brownish, scaly rash involving the arms and lateral aspects of the thighs. Fifteen days before the appearance of the first lesions upon the arm, she had the second dose of mRNA COVID-19 vaccine. The patient did not report having any known skin disease and she denied any recent history of infection or drug administration. No accompanying systemic symptoms were present but the patient reported having mild pruritus. Dermatological examination showed multiple, tan-colored, annular, thin plaques with central clearing and peripheral scales on the flexor aspects of both arms and lateral thighs with no involvement of

the trunk (Figure 1). There was no mucosal involvement. Potassium hydroxide examination of the skin scrapings was negative. The larger annular-scaly plaque on the right forearm was thought to represent the herald patch (Figure 1B). The patient confirmed that the larger plaque on the right forearm appeared first followed by the emergence of smaller ones, further supporting the diagnosis of PR. With clinical findings, a final diagnosis of atypical PR possibly induced by the mRNA COVID-19 vaccine was made. She was reassured of the benign, self-limited nature of the disease and given symptomatic treatment which resulted in the regression of the lesions.

PR is a self-limited papulosquamous disease that tends to follow the skin cleavage lines forming a Christmas tree pattern in its classical form.² PR most commonly affects adolescent and young adults; human herpesvirus (HHV)-6 and HHV-7 reactivation, various other viral/bacterial infections, drugs, vaccinations stress, atopy, and autoimmunity are implicated in its etiopathogenesis.² A larger oval scaly plaque, named the herald patch, typically appears on the trunk, and a few days later smaller, erythematous, scaly eruption follows mainly involving the proximal extremities and trunk.² There seem to be considerable differences between vaccine-induced PR and PR-like eruption in terms of clinical and histopathological findings.³ PR-like eruption may also be seen after different kinds of drug and vaccine

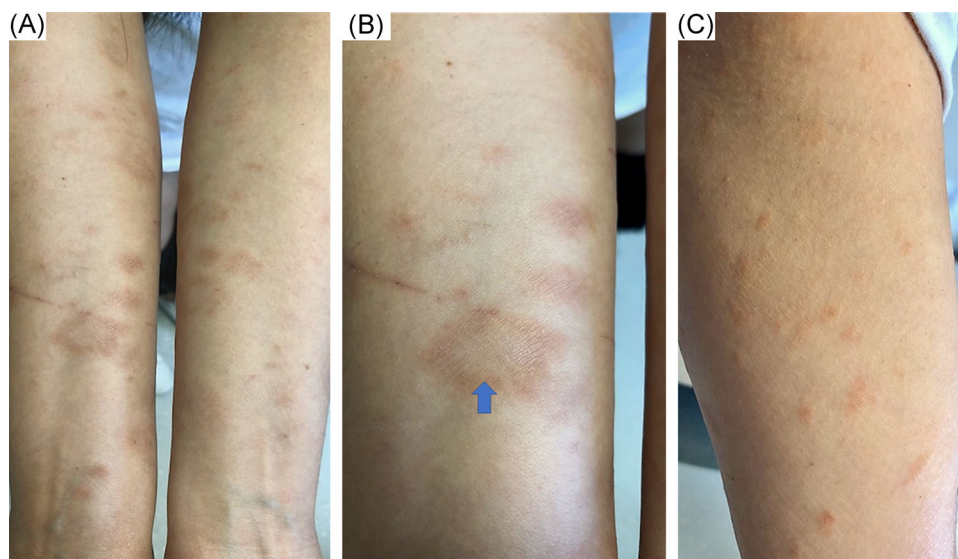


FIGURE 1 Tan colored annular scaly plaques with central clearing present upon both forearms (A), the larger, annular herald patch distinguishable on the right inner forearm (B), small, pale red to brown scaly plaques on the medial aspects of the upper arms (C)

TABLE 1 The cases of COVID-19 vaccine-induced pityriasis rosea and pityriasis rosea-like eruptions reported in the literature

	The present case	Abdullah et al. ⁴	Cyrenne et al. ⁵	Akdaş et al. ⁶	Carballido et al. ⁷	Temiz et al. ⁸	Adya et al. ⁹	Marcantonio-Santa et al. ¹⁰	Busto-Leis ¹¹
Number of patients	1	1	1	1	1	31	1	2	2
Age (years)	34	40	20	45	35	Mean age: 44.9	21	22 and 54	26 and 29
Gender	Female	Man	Female	Female	Male	18 patients: female, 13 patients: male	Male	Female	Male
COVID-19 vaccine type	mRNA	mRNA	mRNA	Inactivated	mRNA	14 cases: mRNA vaccine, 17 cases: inactivated vaccine	Recombinant	mRNA	mRNA
Vaccine dose at the emergence of pityriasis rosea	Second dose	Second dose	First dose (but aggravated with the second dose)	First dose	First dose (but also flared up with the second dose)	19 cases: first dose, 12 cases: second dose	First dose	Case 1: second dose, Case 2: first dose (also flare with the second dose)	Second dose
Associated symptoms	Pruritus	Not available	Pruritus	None	Pruritus	24 patients: pruritus	Myalgia and febrile episode	None	None
Clinical type	Atypical	Typical	Typical	Typical	Typical	26 cases: typical PR, 5 cases: atypical PR	Atypical	Typical	Typical
Localization	Arms and thighs	Arms, thighs, chest, abdomen, and flanks	Trunk and proximal extremities	Trunk and proximal extremities	Trunk and proximal extremities	Not available	Trunk and proximal extremities	Trunk	Trunk
Time interval between the onset of pityriasis rosea and vaccine application	2 weeks	1 week	2 days	4 days	Not available	Average time: 12.7 days	4 days	Case 1: 7 days, Case 2: 1 week	Case 1: 7 days, Case 2: 24 h

administration; it tends to be itchy, widespread, and confluent compared to the classical PR.³ Moreover, mucous membranes are more likely to be affected, the herald patch is not prominent and patients commonly do not have prodromal symptoms in PR-like eruption.³ Blood eosinophilia may be evident and dermal eosinophils may be observed by histopathological examination in patients with PR-like eruption.³ Virological assays which detect HHV-6 and HHV-7 reactivation, confirm the diagnosis of PR.³ In our case, the cutaneous eruption was limited only to the extremities, the herald patch was prominent on the flexor arm, there was no mucosal involvement and no blood eosinophilia was present, supporting the diagnosis of vaccine-induced PR. However, the patient did not have any prodromal symptoms and the lesions were slightly itchy both of which are more commonly seen in vaccine-induced PR-like eruption. Unfortunately, we were not able to perform HHV-6 or HHV-7 polymerase chain reaction assay. So, we were not able to precisely distinguish between PR and PR-like eruption for our case, but the clinical features mainly suggested the diagnosis of vaccine-induced PR.

PR and PR-like eruptions following both the inactivated and mRNA COVID-19 vaccines have been reported in the literature (Table 1). In the previously reported cases, the main sites of involvement of PR and PR-like eruption were the proximal extremities and trunk which is in concordance with the classical form of the disease. For example, Busto-Leis et al.¹¹ presented two cases of vaccine-associated PR developed 1 week and 24 h after the second dose of mRNA COVID-19 vaccine administration, respectively. These two patients had the classical herald patch and the trunk was the main site of involvement supporting the diagnosis of classical PR.¹¹ Inversely, our patient developed PR just upon the lateral thighs and arms after the second dose of mRNA COVID-19 vaccine; no trunk involvement was observed. Additionally, the herald patch was apparent upon the flexor aspect of the right forearm, not on the trunk as in classical PR. Therefore, with these distinctive clinical features, our patient represents an atypical form of PR.² Similar to our case, Temiz et al.⁸ reported five cases of atypical PR such as purpuric and vesicular forms developed after COVID-19 vaccination in a study of 31 patients. On the other hand, Adya et al.⁹ observed another case of papulovesicular PR-like eruption in a young male patient 4 days after the first dose of recombinant COVID-19 vaccine. SARS-CoV-2 induced lymphopenia and functional impairment of CD4⁺ T cells might result in the reactivation of HHV-6 and HHV-7 thereby inducing PR and PR-like eruption after COVID-19 vaccine application.¹²


All in all, we would like to report an atypical case of PR possibly induced by the second dose of mRNA-COVID-19 vaccine to increase awareness of the benign, temporary cutaneous side effects of COVID-19 vaccines. PR is a self-limited exanthem that does not require the postponement of the vaccination and can be treated symptomatically.

AUTHOR CONTRIBUTIONS

Ecem Bostan: Conceptualization, Visualization, Writing – original draft. **Adam Jarbou:** Conceptualization, Data curation.

DATA AVAILABILITY STATEMENT

Data are available from the corresponding author upon reasonable request.

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