

Pityriasis rosea and pityriasis rosea-like eruption after anti-SARS-CoV-2 vaccination: a report of five cases and review of the literature

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Abstract

Only a few cases of pityriasis rosea (PR)/pityriasis rosea-like eruption (PRLE) after anti-SARS-CoV-2 vaccination have been reported. In the period May 2021-February 2022 we observed five cases of clinically typical PR that appeared 2 to 3 weeks after anti-SARS-CoV-2 vaccination with BNT162b2 (3 patients) or mRNA-1273 (2 patients). In 4 patients PR appeared after the first vaccination; in one patient after the second one. In 3 patients a biopsy for histopathological examinations was carried out. Results were typical for PR. In all patients laboratory examinations were within normal ranges. All patients were treated with cetirizine. Complete remission was observed within 14-30 days. Four patients were subjected to the second vaccination, but no skin lesions appeared. All patients are currently in good general health. It is possible that a relationship between anti-Sars-CoV-2 vaccination and PR/PRLE exists; however, it is very rare, in consideration of millions of vaccinated subjects and the low number of reported cases of PR/PRLE. The pathogenesis of this relationship is unknown. However, some hypotheses may be advanced: PR/PRLE following anti-Sars-CoV-2 vaccination may be just a coincidence; anti-Sars-CoV-2 vaccines cause a reactivation of HHV-6 and/or HHV-7; vaccines can induce a delayed hypersensitivity response clinically similar to drug-induced PRLE.

Introduction

Pityriasis rosea (PR) is an acute, exanthematous disease likely caused by human herpesvirus (HHV)-6 and/or HHV-7. The disease begins with a single erythematous plaque, the so-called herald patch that usu-

ally appears on the trunk: it is roundish, pink to red in color and remains the only clinical manifestation for some days, when widespread, clinically similar, although smaller lesions appear. Itching is often mild. The duration of the infection ranges from two weeks to three months.

Only some cases of PR/pityriasis rosea-like eruption (PRLE) after anti-SARS-CoV-2 vaccination have been reported.¹⁻¹⁸ In the period May 2021-February 2022 we observed five cases of clinically typical PR that appeared after anti-SARS-CoV-2 vaccination with BNT162b2 (3 patients) or mRNA-1273 (2 patients). We include a review on all cases of PR/PRLE after anti-SARS-CoV-2 vaccination reported in the literature and discuss some pathogenetic hypotheses.

Case Report

In all patients PR was characterized by the appearance of a typical herald patch (Figure 1), followed, a few days later, by widespread, clinically similar, although smaller lesions. Patients' characteristics are reported in Table 1.

In 4 patients PR appeared after the first vaccination; in 1 patient after the second one. In 3 patients a biopsy for histopathological examinations was carried out. Results were superimposable: parakeratosis, mild spongiosis, acanthosis and exocytosis were seen in the epidermis. Perivascular lymphocytic infiltrates with some extravasated erythrocytes were observed in the superficial dermis (Figure 2). In all patients laboratory examinations were within normal ranges. All patients were treated with cetirizine (20 mg/day for 7-14 days). Complete remission was observed within 14-30 days. Four patients were subjected to the second vaccination, but no skin lesions appeared. All patients are currently in good general health.

Discussion

As previously mentioned, only some cases of PR/PRLE after anti-SARS-CoV-2 vaccination have been reported (Table 2).¹⁻¹⁸

PRLE usually appears following a drug, without prodromal symptoms. Herald patch is often absent. The face may be involved; involvement of the oral cavity occurs in 50% of patients. Itching is often severe. Peripheral eosinophilia is often present. No HHV-6 and HHV-7 reactivation is detected. The length of the rash is shorter in comparison with PR.¹⁹

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Literature data about PR/PRLE after anti-SARS-CoV-2 vaccination may be summarized as follows: i) the infection occurs both in males and females (in several articles the gender was not reported); ii) the age ranges from 19 to 82 years (the count of the mean age is impossible because in several articles patient's age was not specified). In a Turkish-Egyptian study, the average age was 44.9 years;¹⁷ iii) in 30 cases the vaccine used was BNT162b2, in 18 cases it was CoronaVac, in 4 cases it was AZD1222 and in 4 cases it was mRNA-1273; in 5 cases, the vaccine

was generically defined as “mRNA” or “recombinant”. In a Spanish study, PR/PRLE was observed in 11 patients (6.7%) vaccinated with BNT162b2, in 5 patients (3.4%) vaccinated with mRNA-1273 and in 4 patients (4.2%) vaccinated with AZD1222.² Available data suggest that BNT162b2 vaccine is more related to PR/PRLE than other vaccines. If so, the reason may be simple: in several countries, BNT162b2 is the most used vaccine; iii) in

55 cases the rash was classified as PR, in 6 cases as PRLE; iv) in 39 cases the eruption appeared 1-12 days after the first dose (around: 4.8 days). In an American study, the average latency time was 13 days.⁷ In the previous cited Turkish-Egyptian study, the average latency time was 12.7 days.¹⁷ In 22 cases the eruption appeared 1-21 days after the second dose (average: 8.8 days); in 2 cases the eruption occurred both after the first and the second dose.

Conclusions

It is possible that a relationship anti-Sars-CoV-2 vaccination–PR/PRLE exists; however, it is very rare, in consideration of millions of vaccinated subjects and the low number of reported cases with PR/PRLE. The pathogenesis of this relationship is unknown. However, some hypotheses may be advanced: i) PR/PRLE following anti-

Table 1. Patients' characteristics.

Patient number	Gender	Age	Appearance of PR	Symptoms	Duration
1	Male	56	2 weeks after the 1 st dose (Figure 1) of BNT162b2	Mild itching	25 days
2	Male	47	1 week after the 1 st dose of BNT162b2	Mild itching	14 days
3	Female	22	3 weeks after the 1 st dose of BNT162b2	Mild itching	25 days
4	Male	37	2 weeks after the 1 st dose of mRNA-1273	Severe itching	30 days
5	Female	47	3 weeks after the 2 nd dose of mRNA-1273	Mild itching	21 days

PR, pityriasis rosea.

Table 2. Cases of pityriasis rosea/pityriasis rosea-like eruption after anti-SARS-CoV-2 vaccination reported in the literature.

Ref	Sex	Age (years)	Vaccines	Clinical manifestations
1	NS	NS	mRNA-1273	PR after the 1 st dose
1	NS	NS	BNT162b2	PR after the 1 st dose
1	NS	NS	BNT162b2	PR after the 2 nd dose
3	M	35	BNT162b2	PRL eruption after the 1 st dose; flare up after the 2 nd dose
4	NS	NS	BNT162b2	PR 1 day after the 2 nd dose
4	NS	NS	BNT162b2	PR 7 days after the 2 nd dose
5	F	45	CoronaVac	PR 4 days after the 1 st dose and 4 days after the 2 nd dose
6	M	66	BNT162b2	PR 7 days after the 1 st dose
7	NS	41-82	BNT162b2 (4) mRNA-1273 (3) AZD1222 (1)	PR 13 days (median) after the 1 st dose
8	F	20	BNT162b2	PRL eruption 2 days after the 1 st dose
8	M	40	BNT162b2	PRL eruption 3 weeks after the 2 nd dose
9	F	42	BNT162b2	PRL eruption 4 days after the 2 nd dose
9	M	64	BNT162b2	PRL eruption 5 days after the 1 st dose
10	M	40	NS (mRNA)	PR 7 days after the 2 nd dose
11	M	19	NS (recombinant)	PR 2 days after the 1 st dose
11	M	51	NS (recombinant)	PR 7 days after the 2 nd dose
12	M	24	AZD1222	PR 1 day after the 1 st dose
13	F	34	NS (mRNA)	PR 15 days after the 2 nd dose
14	M	21	NS (recombinant)	PRL eruption 4 days after the 1 st dose
15	F	52	AZD1222	PR 15 days after the 2 nd dose
16	F	52	AZD1222	PR 12 days after the 1 st dose
17	13 M 18 F	44.9 (mean)	BNT162b2 (14) Coronavac (17)	PR 12.7 days (mean) after the vaccination (19 patients after the 1 st dose; 12 patients after the 2 nd dose)
18	F	22	BNT162b2	PR 7 days after the 2 nd dose
18	M	54	BNT162b2	PR 7 days after the 1 st dose

NS, not specified; PR, pityriasis rosea; PRL, pityriasis rosea-like.

Sars-CoV-2 vaccination may be just a coincidence, for instance in those patients in whom PR/PRLE appeared only one day after vaccination;^{4,12} ii) anti-Sars-CoV-2 vaccines cause a reactivation of HHV-6 and/or HHV-7, which is similar to the reported association with herpes zoster;^{1,9} iii) vaccines can induce a delayed hypersensitivity response clinically similar to drug-induced PRLE.¹⁰



Figure 1. Patient n. 1. Erythematous-squamous, annular plaque on the presternal region.

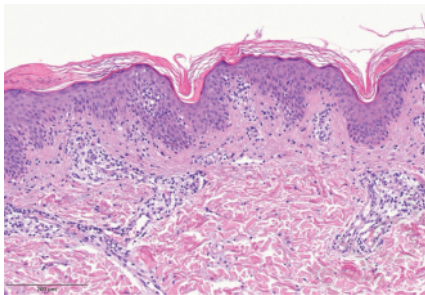


Figure 2. Patient n. 2. Histopathological picture.

References

- 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.
- Català A, Muñoz-Santos C, Galván-Casas C, et al. Cutaneous reactions after SARS-COV-2 vaccination: a cross-sectional Spanish nationwide study of 405 cases. *Br J Dermatol* 2022;186: 142-52.
- Carballido Vázquez AM, Morgado B. Pityriasis rosea-like eruption after Pfizer-BioNTech COVID-19 vaccination. *Br J Dermatol* 2021;185:e34.
- Busto-Leis JM, Servera-Negre G, Mayor-Ibarguren A, et al. Pityriasis rosea, COVID-19 and vaccination: new keys to understand an old acquaintance. *J Eur Acad Dermatol Venereol* 2021;35:e489-91.
- Akdaş E, İltter N, Öğüt B, Erdem Ö. Pityriasis rosea following CoronaVac COVID-19 vaccination: a case report. *J Eur Acad Dermatol Venereol* 2021;35:e491-3.
- Cohen OG, Clark AK, Milbar H, Tarlow M. Pityriasis rosea after administration of Pfizer-BioNTech COVID-19 vaccine. *Hum Vaccin Immunother* 2021;1-2.
- McMahon DE, Kovarik CL, Damsky W, et al. Clinical and pathologic correlation of cutaneous COVID-19 vaccine reactions including V-REPP: a registry-based study. *J Am Acad Dermatol* 2021;S0190-9622.
- Cyrenne BM, Al-Mohammed F, DeKoven JG, Alhusayen R. Pityriasis rosea-like eruptions following vaccination with BNT162b2 mRNA COVID-19 vaccine. *J Eur Acad Dermatol Venereol* 2021;35:e546-8.
- Farinazzo E, Ponis G, Zelin E, et al. Cutaneous adverse reactions after mRNA COVID-19 vaccine: early reports from Northeast Italy. *J Eur Acad Dermatol Venereol* 2021;35:e548-51.
- Abdullah L, Hasbani D, Kurban M, Abbas O. Pityriasis rosea after mRNA COVID-19 vaccination. *Int J Dermatol* 2021;60:1150-1.
- Huang L, Yao Z, Zhang J. Two cases of pityriasis rosea after the injection of coronavirus disease 2019 vaccine. *J Eur Acad Dermatol* 2022;36:e9-e11.
- Mehta H, Handa S, Malhotra P, et al. Erythema nodosum, zoster duplex and pityriasis rosea as possible cutaneous adverse effects of Oxford-AstraZeneca COVID-19 vaccine: report of three cases from India. *J Eur Acad Dermatol* 2022;36:e16-8.
- Bostan E, Jarbou A. Atypical pityriasis rosea associated with mRNA COVID-19 vaccine. *J Med Virol* 2022;94:814-6.
- Adya KA, Inamadhar AC, Albadri W. Post Covid-19 vaccination papulo-vesicular pityriasis rosea-like eruption in a young male. *Dermatol Ther* 2021;34:e15040.
- Pedrazini MC, Da Silva MH. Pityriasis rosea-like cutaneous eruption as a possible dermatological manifestation after Oxford-AstraZeneca vaccine: case report and brief literature review. *Dermatol Ther* 2021;34:e15129.
- Leerunyakul K, Pakornphadungsit K, Suchonwanit P. Case report: pityriasis rosea-like eruption following COVID-19 vaccination. *Front Med* 2021;8: 752443.
- Temiz SA, Abdelmaksoud A, Dursun R, et al. Pityriasis rosea following SARS-CoV-2 vaccination: a case series. *J Cosmet Dermatol* 2021;20:3080-4.
- Marcantonio-Santa Cruz OY, Vidal-Navarro Y, Pesqué D, et al. Pityriasis rosea developing after COVID-19 vaccination. *J Eur Acad Dermatol Venereol* 2021;35:e721-2.
- Drago F, Ciccarese G, Parodi A. Pityriasis rosea and pityriasis rosea-like eruptions: how to distinguish them? *JAAD Case Rep* 2018;4:800-1.