

# PITYRIASIS ROSEA-LIKE RASH AFTER COVID-19 VACCINATION WITH OXFORD-ASTRAZENECA: A POSSIBLE TRIGGER?

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## ABSTRACT

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Scholars around the world have dedicated themselves to developing an effective vaccine against SARS-CoV-2. However, vaccines have produced adverse effects in some patients. We report the case of a 44-year-old man who developed a pruritic papulosquamous rash on the trunk with a characteristic pattern known as Christmas tree after receiving the first dose of the Oxford-AstraZeneca COVID-19 vaccine, similar to pityriasis rosea (PR). He had no previous symptoms of viral infection and tested negative for neutralizing antibodies (enzyme immunoassay) against COVID-19. There are few reports in the literature about the relationship between the onset of cutaneous adverse reactions and the Oxford-AstraZeneca vaccine, therefore, the dissemination of this case is of paramount importance.

**Keywords:** *Pityriasis rosea; COVID-19; vaccine*

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## INTRODUCTION

Since the beginning of the COVID-19 pandemic, scholars around the world have dedicated themselves to developing an effective vaccine against SARS-CoV-2. However, despite being effective, current vaccines have produced adverse effects in some patients<sup>1</sup>. Some case reports and series have been published about cutaneous manifestations associated with COVID-19 and its vaccines<sup>2</sup>. Identified lesions were classified as acral areas of erythema with vesicles or pustules, other vesicular eruptions, urticarial lesions, maculopapular eruptions, and livedo or necrosis<sup>2</sup>. In this case, we report the onset of an unusual pityriasis rosea (PR)-like rash after the first dose of the Oxford-AstraZeneca COVID-19 vaccine.

## CASE REPORT

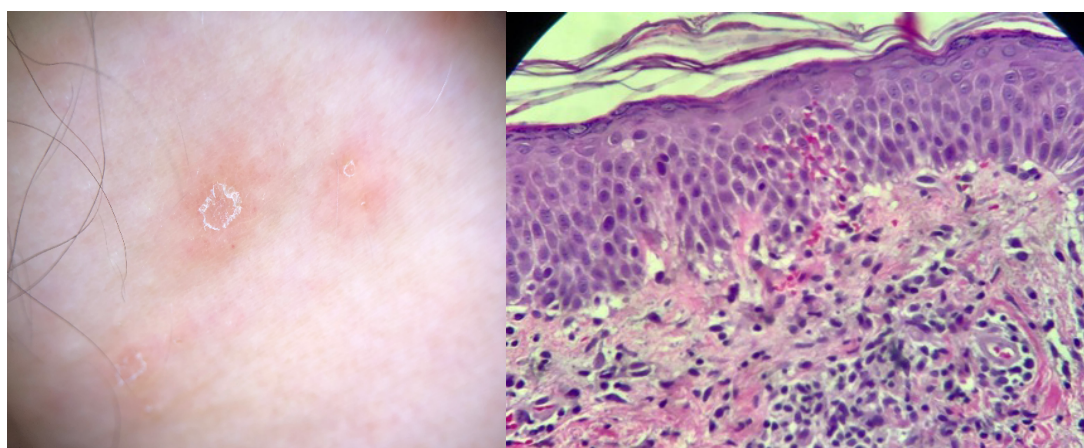
An otherwise healthy 44-year-old man developed a pruritic papulosquamous rash on the trunk with a herald patch and subsequent Christmas tree pattern. The rash progressed with involvement of the upper extremities, armpit, and flanks, extending to the arms and proximal areas of the thighs (Figure 1A, 1B). After 7 days, the lesions showed mild inner collarette scaling (Figure 2A). Thirty days before rash onset, the patient had received the first dose of the Oxford-AstraZeneca COVID-19 vaccine. He denied the presence of other symptoms or viral infections in the last 6 months. Eight months earlier, he tested negative for SARS-CoV-2 (total serum immunoglobulin levels). After vaccination, he tested negative for neutralizing antibodies (enzyme immunoassay). Histopathology was compatible with PR and showed spongiosis, focal parakeratosis, perivascular lymphocytic infiltrate, and the presence of extravasated red blood cells within the dermis and epidermis (Figure 2B). Laboratory tests were normal (complete blood count, white blood cell count,

and liver and kidney function tests). The patient tested negative for syphilis, HIV, and hepatitis B and C. The type 1 and type 2 HSV IgM tests were negative, but the IgG test was positive. The clinical course lasted approximately 20 days, with complete

remission after treatment with acyclovir and prednisone. The patient received the second dose of the vaccine and did not have recurrence of skin manifestations. The patient chose not to receive the third dose of the COVID-19 vaccine.



**Figure 1:** Generalized erythematous papules and plaques with a Christmas tree pattern on the trunk and upper extremities (A, B).



**Figure 2:** A: Typical herald patch with peripheral collarette scaling (Digital dermoscopy – FotoFinder® HD Medicam 800 (20× unpolarized light); B: Histopathology of pityriasis rosea: spongiosis, focal parakeratosis, perivascular lymphocytic infiltrate, and presence of extravasated red blood cells within the dermis and epidermis.

## DISCUSSION

PR is an acute, benign, self-limiting exanthem characterized by papulosquamous, oval, and mildly inflammatory lesions on the trunk and extremities<sup>1</sup>. Its etiology may involve a previous viral infection, in addition to bacterial infections, vaccines, and certain medications<sup>1,3,4</sup>. In relation to PR-like maculopapular rashes induced by COVID-19 vaccination, the hypothesis of immune dysregulation and reactivation of latent viruses such as HHV-6 and HHV-7 has been raised<sup>3</sup>.

Lymphopenia and impairment of CD4+ T cells may be associated with this viral reactivation<sup>3,5,6</sup>. The clinical diagnosis is based on patient history, dermoscopy, and follow-up of lesion evolution<sup>1</sup>. Skin biopsy may be necessary in atypical cases or unusual situations, as in another case report in which histopathology showed superficial perivascular dermatitis, focal mounds of parakeratosis, hyperplasia, and focal epidermal spongiosis<sup>7</sup>. PR is generally a self-limiting condition and usually resolves in 6 to 8 weeks without

specific treatment<sup>8</sup>. The use of topical and systemic corticosteroids may be helpful in severe cases, and antihistamines may be used to control itching<sup>1</sup>.

There are several reports of skin rashes after COVID-19 vaccination<sup>1,9</sup>. The most commonly reported effects are pain at injection site, fever, headache, nausea, and vomiting<sup>1</sup>. However, a report issued by the United Kingdom in 2021 described 52 cases of PR-like skin reactions between January and June 2021 (all UK)<sup>1,10</sup>. A study of 414 patients described the side effects of the Pfizer-BioNTech (BNT162b2) and Moderna (mRNA-1273) vaccines, with Moderna presenting a higher incidence of side effects (83%)<sup>9</sup>. According to the study, 43% of patients who had a reaction to the first dose experienced the same symptoms after receiving the second dose. However, there were only 4 cases of PR-like rashes among the study population<sup>9</sup>. In a study of 2,740 patients, 50 had adverse reactions to COVID-19 vaccination, mostly consisting of skin reactions after the first dose of the AstraZeneca vaccine<sup>11</sup>. Of note,

patients with a vaccine-induced PR rash had a latency > 14 days, similar to our reported case<sup>11</sup>. Despite the consistent temporal relationship between vaccination with AstraZeneca and rash onset, there are less common immunization schedules that may produce PR-like rashes, such as vaccines against smallpox, tuberculosis, influenza, papillomavirus, poliomyelitis, tetanus, pneumococcus, measles-mumps-rubella, hepatitis B, and yellow fever<sup>9</sup>. In this case, the patient had negative serology for SARS-CoV-2 and his immunization schedule was up to date for other vaccines. The typical clinical presentation of PR and the temporal relationship between vaccination and rash onset, associated with the absence of clinical symptoms and laboratory findings of SARS-CoV-2 infection, supported the initial hypothesis of PR induced by immunization with the Oxford-AstraZeneca COVID-19 vaccine. Although causality cannot be proven, this case report is a relevant addition to the literature and should not discourage vaccination.

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