

# First Case Report of COVISHIELD Vaccine Induced Pityriasis Rosea-like Eruption Following Second Dose

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## ABSTRACT

COVISHIELD vaccine, approved in India for restricted use in emergency situation is a recombinant, replication-deficient chimpanzee adenovirus vector vaccine. Various cutaneous adverse effects post-covishield vaccine have been reported so far. We report the case of a 36-year-old female, who presented with an itchy skin rash of 3 days duration over the trunk and bilateral upper limbs. On examination, there were multiple, small, violaceous papules with adherent scales, coalescing to form small plaques over the abdomen, back, bilateral arms, and thighs. She had received second dose of the covishield vaccine 8 days prior to the onset of the skin rash. Skin biopsy revealed hyperkeratosis, parakeratosis, hypogranulosis, and spongiosis of the epidermis along with dermal lymphohistiocytic infiltrate, and mild interface dermatitis, consistent with pityriasis rosea-like eruption. She was managed with oral antihistamines and topical steroids. To the best of our knowledge, this is the first case of pityriasis rosea-like eruption following the second dose of the Covishield vaccine, reported from India.

**Keywords:** COVID-19 Vaccine, Recombinant Adenovirus Vector Vaccine, Cutaneous Adverse Effects, Christmas Tree Pattern

\*See End Note for complete author details

## INTRODUCTION

To combat the COVID-19 pandemic, several vaccines were developed, such as mRNA, DNA, vector, killed & live attenuated vaccines. Covishield is a recombinant, replication-deficient chimpanzee adenovirus vector vaccine encoding the SARS-CoV-2 Spike (S) glycoprotein, approved in India for restricted use in emergency situation to prevent COVID-19 disease.<sup>1</sup> Various post covid vaccine cutaneous adverse effects include urticarial eruptions, morbilliform eruptions, pemphigoid/chilblains, cosmetic filler reactions, herpes zoster, herpes simplex flares, pityriasis rosea (PR), and pityriasis rosea-like eruptions (PR-LE), which have been reported in about 1.5% of the patients who received the Moderna and Pfizer vaccine.<sup>2,3</sup> The adverse effects of the Covishield vaccine have not been fully characterized yet. We would like to report a case of pityriasis rosea-like eruption (PR-LE) in a 36-year-old female following the second dose of the Covishield vaccine, highlighting its clinicohistopathological correlation.

## CASE REPORT

The patient, a 36-year-old female, presented with an intensely itchy skin rash over the trunk and upper limbs of 3 days duration, which developed 8 days after she was administered the second dose of the Covishield vaccine. There was no history of fever, headache, arthralgia, myalgia, or sore throat. On examination, there were multiple, small, papules with violaceous center and mild adherent scales on the periphery, coalescing to form plaques of approximately 1-2 cm, over the neck, trunk, bilateral arms, and thighs. The plaques were distributed in a Christmas tree pattern over the trunk surrounded by multiple tiny translucent vesicles [Figure 1]. Herald patch was not seen. Mucosa, hair, nails, palms, soles, and systemic examination were normal. Laboratory investigations revealed a normal hemogram, liver and renal function tests, ESR, and urinalysis. Viral markers for Hepatitis-B, C, and HIV were non-reactive. RT-PCR performed for SARS-CoV-2 was negative. Lesional biopsy demonstrated sub-corneal blister, hyperkeratosis,

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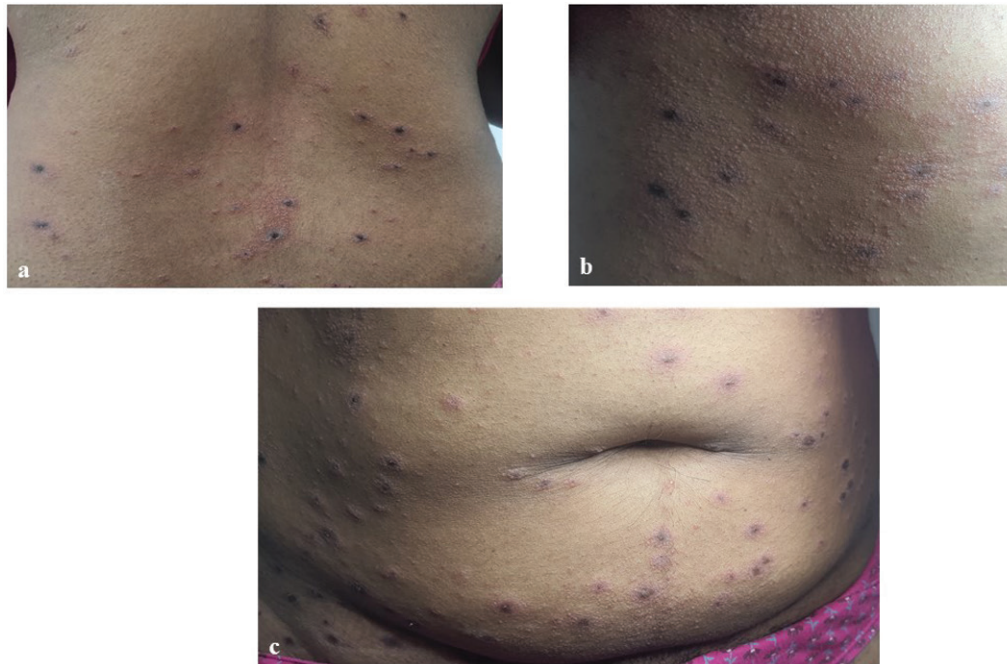
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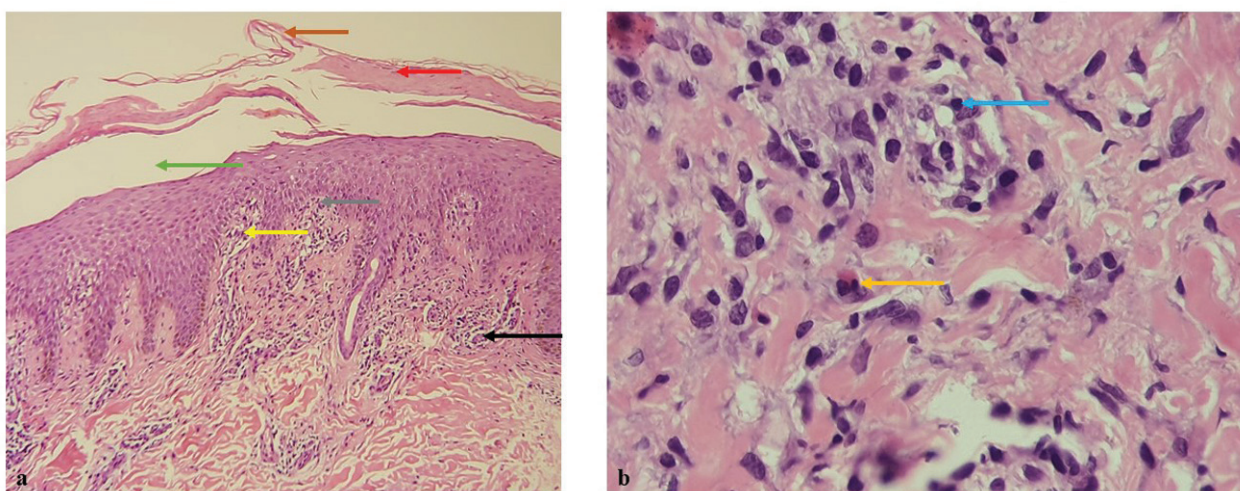
**Figure 1. Multiple, small, violaceous papules present over the trunk distributed in a Christmas tree pattern surrounded with multiple tiny translucent vesicles, a) back, b) right flank, and c) abdomen.**

parakeratosis, hypogranulosis, spongiosis of the epidermis, and interface dermatitis. Dermis showed perivascular lymphohistiocytic infiltrate with few eosinophils, as well as extravasation of red blood cells. [Figure 2]. Direct immunofluorescence did not show any deposits. Thus, on clinicopathological correlation, a diagnosis of PR-LE was made. She was prescribed levocetirizine 5 mg twice daily to be taken orally, along with the topical application of Mometasone furoate 0.1% cream twice daily and mupirocin

cream on vesicles twice daily, all for a period of 10 days. No complications were reported by the patient after the first dose. She was on regular follow-ups for 3 months and during this period, she showed remarkable improvement.

## DISCUSSION

In India, from 3 January 2020 to 25 April 2022, there have been 43,060,086 confirmed cases of COVID-19 with 522,223



**Figure 2. Photomicrograph showing a) hyperkeratosis (brown arrow), parakeratosis (red arrow), subcorneal blister (green arrow), spongiosis of the epidermis (yellow arrow), perivascular lymphohistiocytic infiltrate in the dermis (black arrow) and interface dermatitis (grey arrow). (H & E, 100 X), b) perivascular lymphohistiocytic infiltrate (blue arrow) and eosinophils (orange arrow) in the dermis. (H & E, 400 X)**

deaths, reported to WHO.<sup>4</sup> As of 11 April 2022, a total of 1,860,524,339 vaccine doses have been administered.<sup>4</sup>

Pityriasis rosea (PR) is characterized by a herald patch followed by similar, smaller oval lesions along the cleavage lines of the trunk and limbs in a Christmas tree pattern.<sup>5</sup> Morphologically, atypical variants of PR may be classified as vesicular, purpuric, hemorrhagic, or urticarial.<sup>5</sup> Vesicular forms of PR-like lesions, as described in the literature, were seen in our patient.

Unlike PR, PR-LE is characterized by more itchy and diffuse lesions with more frequent involvement of mucous membranes and no preceding herald patch or prodromal symptoms.<sup>5</sup> On microscopy, PR-LE usually exhibits interface dermatitis with dermal eosinophils, and blood tests typically demonstrate eosinophilia with no signs of HHV-6/7 systemic reactivation.<sup>6</sup>

Papakostas et al. postulated that vaccine-induced PR-LE may be a result of the reactivation of Human Herpes Virus-6/7 (HHV-6/7) virus secondary to immune stimulation by the vaccine or due to molecular mimicry with a viral epitope triggering a T-cell mediated response.<sup>6</sup>

In a study by McMahon et al., clinicopathologic correlation revealed thirteen different COVID-19 vaccine reaction patterns, where biopsy reports were evaluable. A new term Vaccine-Related Eruption of Papules and Plaques (V-REPP) has been coined.<sup>7</sup> The histologic reaction pattern most commonly biopsied was a spectrum of spongiotic dermatitis. Robust V-REPP on biopsy showed marked spongiosis with intraepidermal vesicles and minimal to no interface changes, moderate V-REPP showed moderate spongiosis more often than interface changes, and mild V-REPP demonstrated mild spongiosis and more prominent interface changes.<sup>7</sup> Eosinophils were commonly present in cases with marked spongiosis and were less likely to be present in cases with minimal spongiosis. Histopathologically, our case represents moderate V-REPP.

In a recent review by Buckley et al.,<sup>8</sup> 30 cases of PR/PR-LE post mRNA covid vaccines (Pfizer and Moderna) have been reported. Out of these, 18 and 10 cases were reported after receiving the first and second dose respectively, while in 11 cases, the dose was not stated. Three cases developed PR-LE following the first dose, which was aggravated with the second dose. PR-LE following recombinant covid vaccine Covishield/Oxford-AstraZeneca has been reported in 8 cases in the literature.<sup>3,9-12</sup> Only one case following CoronaVac (inactivated virus vaccine) has been documented.<sup>13,14</sup>

## CONCLUSION

Our case presented with atypical manifestations of PR in form of tiny vesicles and the absence of a herald patch. This is the first case report from India following the second dose of the Covishield vaccine. PR-LE is a self-limiting benign exanthema and does not require interruption of the vaccination program for life-threatening SARS-CoV-2 infection, but close monitoring of the skin eruptions is required. It is thus important for healthcare officials to recognize possible cutaneous adverse effects of COVID vaccines, including PR-LE, for early diagnosis and treatment.

## END NOTE

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**Conflict of Interest:** None declared

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