

## LETTER

# Lichen planus pigmentosus inversus with nail involvement following COVID-19 vaccination: A case report

Dear Editor,

Coronavirus disease 2019 (COVID-19) vaccines may lead to onset or exacerbation of inflammatory skin disorders such as lichen planus, psoriasis, and bullous pemphigoid. However, association between COVID-19 vaccines and immune-mediated skin disorders remains unknown.<sup>1</sup> Herein, we present a patient who developed lichen planus pigmentosus inversus (LPPI) with nail involvement following the administration of Pfizer-BioNTech COVID-19 vaccine.

A 52-year-old male patient was admitted with an 8-week history of mildly pruritic rash in the axilla and groin and, nail changes. The patient stated that the skin lesions appeared 1 week after the third dose of Pfizer-BioNTech COVID-19 vaccine and nail changes occurred 2 weeks after the onset of skin lesions. No previous infection, physical or psychological trauma, or exposure to a new medication was detected. The past medical history was remarkable for asthma and he was treated with inhaled fluticasone furoate and vilanterol 200/25 mcg/ daily. The family history was unremarkable. Dermatological examination revealed hyperpigmented plaques with distinct borders in the right inguinal region and in both axilla and, hyperpigmented macules in the right antecubital and left popliteal fossa. Moreover, longitudinal ridging and fissuring, splinter hemorrhage, yellowish discoloration and onycholysis were detected on the right third, fourth and left first, second and fifth fingernails (Figure 1). No scalp or mucosal involvement was observed.

Laboratory tests including complete blood count, biochemistry panel, serum levels of ferritin, folate, vitamin B12, thyroid stimulating hormone, free triiodothyronine, and thyroxine were all within normal limits. Venereal disease research laboratory test (VDRL), hepatitis B surface antigen, hepatitis B surface antibody, anti-hepatitis C, and anti-human immunodeficiency virus (HIV) antibodies were negative. The skin biopsy was performed from a hyperpigmented plaque to reach a definitive diagnosis. Histopathological evaluation of the specimen revealed orthokeratosis, hypergranulosis, vacuolar degeneration of the basal layer, Civatte bodies in the epidermis, pigment incontinence, and lichenoid infiltrate of lymphocytes in the dermis (Figure 2). The diagnosis of LPPI was made based on clinical and histopathological findings. Therefore, topical use of clobetasol propionate 0.05% ointment and triamcinolone acetonide (10 mg/ml) injection to the nail matrix were recommended.

Lichen planus pigmentosus inversus is an uncommon subtype of lichen planus pigmentosus, which presents with brown to gray colored macules in the intertriginous areas. In contrast to lichen planus pigmentosus, LPPI spares sun-exposed areas.<sup>2,3</sup> Lesions are usually

bilateral and unilateral distribution is extremely rare.<sup>4</sup> Hair, nail or mucosal involvement has not been reported in patients with LPPI.<sup>2</sup> Mechanical trauma and hepatitis C virus infection have been associated with LPPI. However, etiopathogenesis of LPPI has not been clearly identified.<sup>2,3</sup> Recently, Sun et al.<sup>5</sup> reported a 64-year-old female patient who developed LPPI 2 weeks after the first dose of Oxford-AstraZeneca COVID-19 vaccine and exacerbation of the disease after the second dose. Sun et al.<sup>5</sup> stated that the patient had hyperpigmented lesions distributed symmetrically in the skin folds without mucosa and nail involvement.<sup>5</sup> In addition, Pfizer-BioNTech COVID-19 vaccine has been associated with lichen planus and lichenoid reaction.<sup>6-8</sup> Zagaria et al.<sup>6</sup> reported a male patient with lichen planus and nail involvement initiated 10 days after Pfizer-BioNTech COVID-19 vaccination.<sup>6</sup> It has been suggested that COVID-19 vaccines might lead to increased level of cytokines, which play role in the development of both lichen planus and LPPI.<sup>5</sup> However, data on the mechanism of action of COVID-19 vaccines in the etiopathogenesis of lichen planus are inadequate.<sup>9</sup>

To the best of our knowledge, the patient we presented is the first case of LPPI with nail findings developed after the administration of Pfizer-BioNTech COVID-19 vaccine in the English medical literature. Our case will hopefully contribute to the literature on relationship between LPPI and COVID-19 vaccines.

## AUTHOR CONTRIBUTIONS

Yusuf Can Edek: Conception and design, literature review, manuscript writing, Betül Ögüt: Analyzing histological images, Funda Tamer: Final approval of the version to be published.

## ACKNOWLEDGMENTS


The patient in this manuscript has given written informed consent to the publication of his case details.


## CONFLICT OF INTEREST

The authors declare no conflicts of interest.

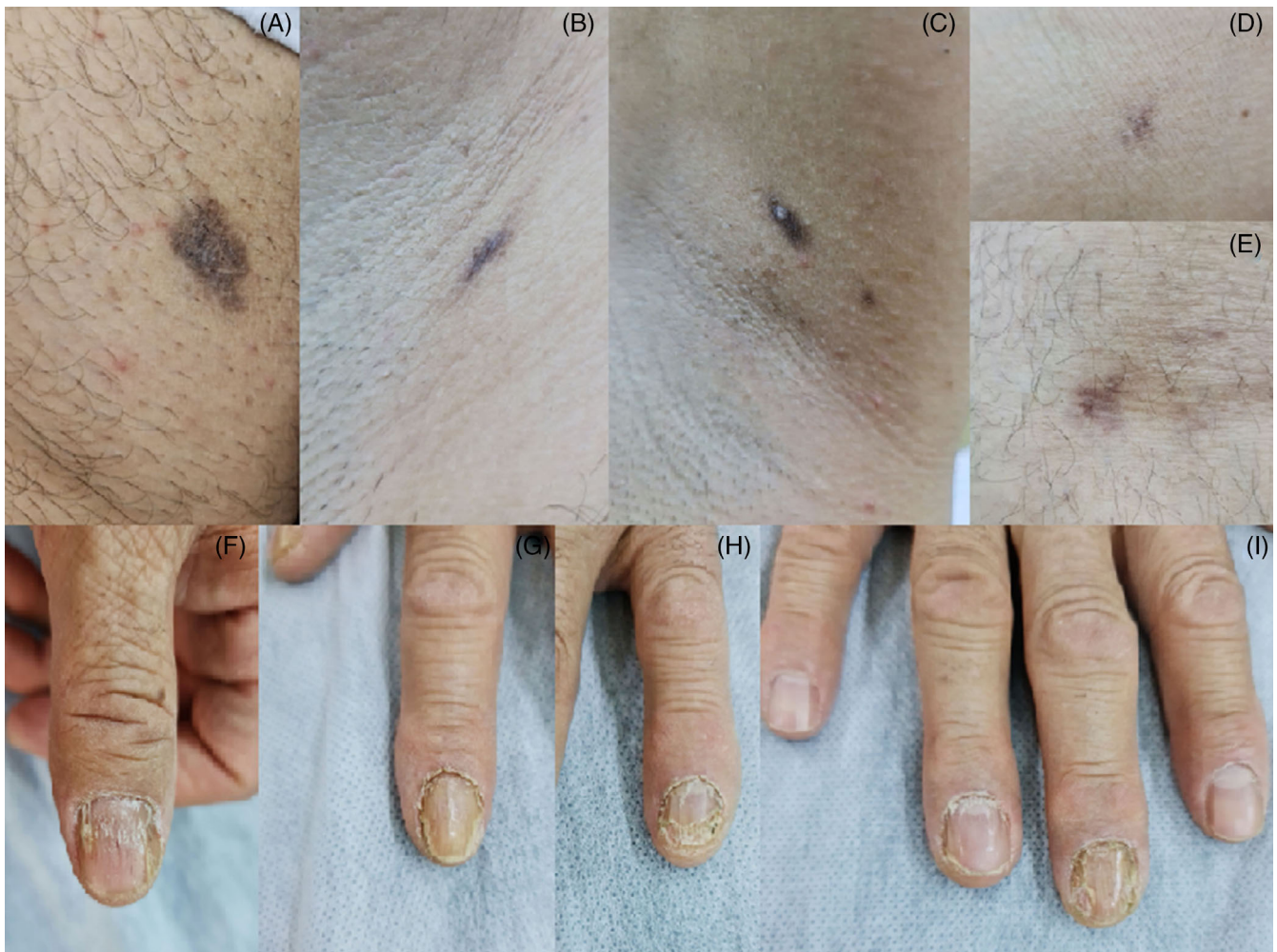
## DATA AVAILABILITY STATEMENT

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

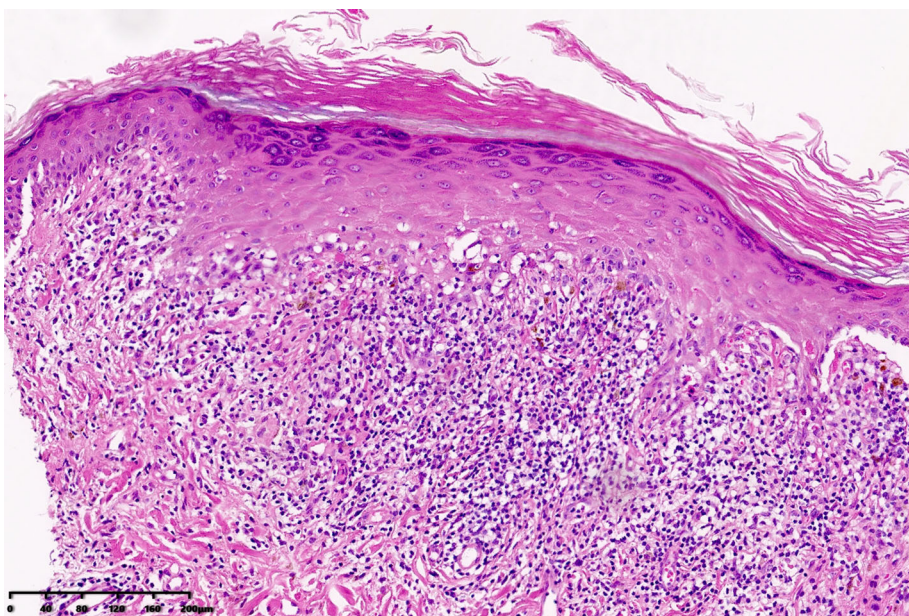
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**FIGURE 1** Skin lesions and nail findings (A) right inguinal region (B) right axilla (C) left axilla (D) right antecubital fossa (E) left popliteal fossa (F) left thumb (G) left index finger (H) left little finger (I) right hand



**FIGURE 2** Histopathological findings; orthokeratosis, hypergranulosis, vacuolar degeneration of the basal layer, Civatte bodies in the epidermis, pigment incontinence and lichenoid infiltrate of lymphocytes in the dermis (Hematoxylin and eosin,  $\times 100$ )

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