

## COEXISTENCE OF LICHEN PLANUS AND COVID-19

### LİKEN PLANUS VE COVID-19 BİRLİKTELİĞİ

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#### Öz

COVID-19 bazı deri bulgularına neden olabilir. Makülopapüler erüpsyon, akral bölgede vezikül ya da püstüllerin eşlik ettiği eritem, monomorfik veziküler erüpsyon, gövde ve akral bölgelerde livedoid veya nekrotik lezyonlar en sık bildirilen deri bulgularıdır. COVID-19 enfeksiyonu sonrası liken planus gelişen az sayıda olgu bildirisi mevcuttur. Biz de COVID-19 sonrası liken planus ile gelen olgumuzu sunmak istiyoruz.

**Anahtar Kelimeler:** COVID-19, Deri, Liken planus

#### Abstract

COVID-19 may cause some skin symptoms. Maculopapular eruptions, erythema of acral areas with vesicles or pustules, urticarial lesions, monomorphic vesicular eruptions, truncal or acral livedoid or necrotic lesions are the most commonly reported skin conditions. There are a few case reports of lichen planus following COVID-19 infection. We also would like to present a patient with lichen planus after COVID-19 infection.

**Keywords:** COVID-19, Lichen planus, Skin

#### Introduction

Lichen planus (LP) is a chronic mucocutaneous inflammatory skin disease affecting the skin, hair, nails and mucous membranes. Typical cutaneous findings are pruritic, polygonal, purplish papules that occur preferentially on the flexor sides of the extremities. However, intertriginous, palmoplantar, or blaschoid localizations are sometimes seen. Some microorganisms, drugs, and contact allergens are thought to be responsible for the etiology of LP, but the exact mechanism is not clearly known (1). Here, we would like to present a patient who developed lichen planus after COVID-19 infection.

#### Case Report

A 40-year-old female patient with no history of lichen planus presented to our outpatient clinic with pruritic rashes on the inframammary areas, arms, and legs. Her history revealed that she had presented to the hospital a month ago with a sore throat and cough and had been diagnosed as COVID-19 by real-time reverse transcriptase polymerase chain reaction (rRT-PCR) testing. The patient, who had no known vaccination against COVID-19, was treated with favipiravir (2x1600 mg on the first day and 2x600 mg on the remaining four days). She had no pulmonary

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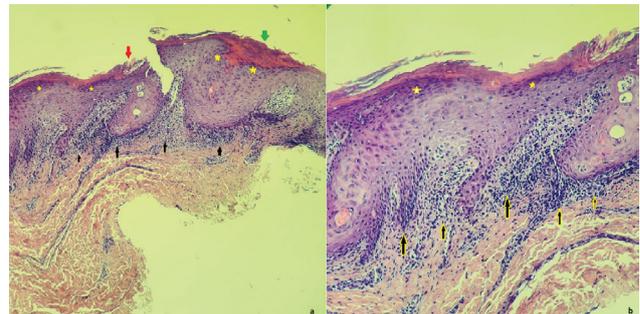
**Figure 1**  
Violaceous papules on the inframammary area

infection. With the initiation of treatment pruritic lesions appeared on her feet. Five days after the end of favipiravir treatment, itchy violaceous lesions appeared on her inframammary areas, legs, and arms. During this time, she was not taking any other medications. On dermatologic examination, she had erythematous-violaceous plane papules on the

inframammary areas, flexural region of arms and ankles (Figure 1, 2). There were Wickham’s striae on the inframammary papules. Hyperkeratotic and scaly plaques were found on the soles of both feet. Reticular white plaques were seen on both sides of buccal mucosa. Hemoglobin, leukocyte, and platelet counts were within the normal range. Biochemical parameters were also normal (urea, creatinine, hepatic transaminase, C-reactive protein). Serology of hepatitis B, hepatitis C, and HIV was negative. We performed a punch biopsy from the skin of the inframammary lesion. Histopathologic examination revealed compact orthokeratotic hyperkeratosis, hypergranulosis, wedge-shaped irregular acanthosis, and necrotic keratinocytes in the epidermis. Band-like lymphocytic infiltration and pigmented melanophages were noted at the dermoepidermal interface. Mild perifollicular inflammation and fibrosis were noted (Figure 3). Based on these histopathologic findings, the patient was diagnosed with lichen planus. Topical corticosteroids were prescribed for her lesions. However, we have no information about her status after treatment because she did not come for follow up.



**Figure 2**  
(a) Violaceous papules on the arms, (b) Hyperkeratotic plaque on the plantar surface of the feet, violaceous papules on the ankles



**Figure 3**  
Orthokeratotic hyperkeratosis (red arrow), orthokeratosis (green arrow), hyperkeratosis, hypergranulosis (yellow stars) irregular acanthosis in epidermis. Band-shaped lymphocytic infiltration at dermoepidermal junction (black arrows) (a) H&E x10, (b) H&E x20

**Discussion**

COVID-19, which causes severe acute respiratory distress syndrome, was first discovered in Wuhan, China, in December 2019. As the literature data on this disease increases, it has been shown that the virus can affect not only the respiratory system but also many organs and systems (2). COVID-19 can also cause some skin symptoms. In the largest serial study conducted in Spain, 375 COVID-19 patients with cutaneous symptoms were examined

(3). Skin symptoms were divided into five categories: maculopapular eruptions (47%), erythema of acral areas with vesicles or pustules (pseudo-chilblain) (19%), urticarial lesions (19%), monomorphic vesicular eruptions (9%), livedoid or necrotic lesions on the trunk or acral skin (6%). Most of the cutaneous symptoms occurred together with or after the other symptoms of COVID-19. The pathogenesis of the skin lesions is not clearly defined. Immunologic activation against the virus, microvascular occlusion, and complement activation are thought to play a role in the development of skin findings due to COVID-19 (4).

LP is an autoimmune, T-cell mediated inflammatory disease of the skin and mucous membranes. The etiology of LP is not clearly known. Genetic factors, stress, drugs, vaccines, contact allergens, trauma, autoimmune diseases, malignancies and infections have been implicated in the etiology of LP. Memory T cells activated against some viral antigens, drugs, and contact antigens are thought to cross-react with epidermal basal cells (5). The best-known viral cause is hepatitis C virus (HCV). However, the relationship between LP and HCV is not fully understood. Viral replication in keratinocytes, circulating antibodies against epithelial antigens, immune cross reactivity between viral antigens and epidermal proteins, disruption of oxidant antioxidant balance, and release of proinflammatory cytokines against the virus may have played a role in the development of LP (1).

In our literature search, we found few cases that developed lichen planus after COVID-19 infection (6-11). Gimeno Castillo et al. reported a 51-year-old female patient who developed pruritic polygonal papules on the lumbar region, hands, and feet 3 weeks after recovery from COVID-19 infection. The patient had been taking lopinavir/ritonavir for treatment of COVID-19 infection. After histopathologic examination of the lesions, she was diagnosed with lichen planus (6). Diaz-Guimaraens et al. reported a 52-year-old female patient who had annular lichen planus with oral involvement. The patient had an annular black plaque on her right shin and reticular white lines on both buccal mucous membranes. Her lesions began 5 days after the onset of COVID-19 symptoms (7). Burgos-Blasco et al. reported another patient with bilateral reticular lesions on her buccal mucosa 1.5 months after COVID-19 infection (8). Another patient reported by Saleh et al. developed oral erosive lichen planus one month after COVID 19 infection (9). Alabdulaaly et al. reported two patients with oral lichenoid dermatitis 21 days and 30 days after COVID infection (10).

A few cases have also been reported in which lichen

planus developed after COVID-19 vaccination (12, 13). No cases of lichen planus associated with favipiravir have been reported.

In our patient, we do not know whether lichen planus developed because of COVID-19 or their association was a coincidence. However, the appearance of lichen planus in our case and in other published cases shortly after COVID infection suggests that it may play a role in the etiology. COVID-19 may be an exogenous antigen initiates the inflammatory response that can cause LP. With new case reports and studies, the relationship between these two diseases can be elucidated. Dermatologists should be alert for such skin lesions that may develop after COVID-19.

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#### **Conflict of Interest Statement**

The authors have no conflicts of interest to declare.

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Written informed consent to participate and publish was obtained from all individual participants included in the study.

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#### **Availability of Data and Materials**

Data are available on request due to privacy or other restrictions.

#### **Authors Contributions**

IDO: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Validation; Visualization; Writing-original draft.

BA: Conceptualization; Investigation; Methodology; Project administration; Writing-review & editing.

KY: Investigation; Visualization; Writing-original draft.

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