



# Lichen planus occurring after Coronavirus disease-2019: A case report

*Koronavirüs hastalığı-2019'dan sonra gelişen liken planus: Bir olgu sunumu*

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## Abstract

The novel Coronavirus disease-2019 (COVID-19), which emerged in December 2019 and caused an unexplained viral pneumonia, rapidly spread worldwide within a few months. A pandemic was declared by the World Health Organization in March 2020. Several cutaneous manifestations of the disease among patients with COVID-19 have been reported. Thus far, the most frequently reported cutaneous findings are morbilliform rash, urticarial lesions, purpuric lesions, oral vesicles, and pityriasis rosea. This report presents a case of lichen planus secondary to COVID-19 and its histopathological findings, which is rarely reported in the literature.

**Keywords:** Lichenoid dermatitis, Coronavirus disease-2019, pandemic, lichen planus

## Öz

Aralık 2019'da ortaya çıkan ve açıklanamayan viral pnömoni olgularına neden olan yeni Koronavirüs hastalığı-2019 (COVID-19), birkaç ay içinde tüm dünyaya hızla yayıldı ve Mart 2020'de Dünya Sağlık Örgütü tarafından pandemi ilan edildi. Birçok COVID-19 hastası arasında hastalığın belirtileri bildirilmiştir. Şimdiye kadar en sık bildirilen deri bulguları morbilliform döküntü, ürtikeryal lezyonlar, purpurik lezyonlar, oral veziküller ve Pityriasis rosea'dır. Burada, literatürde sınırlı sayıda olgu ile bildirilen bir COVID-19'a bağlı liken planus olgusu histopatolojik bulguları ile birlikte sunulacaktır.

**Anahtar Kelimeler:** Likenoid dermatit, Koronavirüs hastalığı-2019, pandemi, liken planus

## Introduction

Severe acute respiratory syndrome-coronavirus-2 (SARS CoV-2) is the causative agent of the novel Coronavirus disease-2019 (COVID-19), which is a viral disease that originated in Wuhan, China, at the end of 2019. COVID-19 has become a pandemic and continues to pose serious threats to people's health and lives<sup>1</sup>. COVID-19 has various clinical symptoms. The most common symptoms with acute and chronic effects include cough, fever, dyspnea, musculoskeletal symptoms (myalgia,

joint pain, and fatigue), chest pain, red eyes, gastrointestinal symptoms, and loss of taste or smell<sup>2</sup>.

Some cutaneous manifestations observed among patients with COVID-19 have also been described, and new findings are subsequently added. Cutaneous symptoms of COVID-19 include morbilliform rash, erythema, herpes zoster, purpura, urticaria, acute hemorrhagic edema, chillblain-like lesions, chickenpox-like vesicles, and pityriasis rosea<sup>3,4</sup>. Herein, we present a case of lichen planus (LP) in a patient with COVID-19.

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## Case Report

A 45-year-old man presented to our dermatology outpatient clinic in April 2021 at the midst of the COVID-19 pandemic. Approximately four months ago his real-time reverse transcription polymerase chain reaction (rRT-PCR) test from a nasopharyngeal swab had tested positive for SARS-CoV-2. At this hospital visit, he presented with malaise, weakness, and chills. He stated that pruritic, purplish lesions on the right shin appeared 2 weeks after the positive test result. According to the patient history and medical records, the rRT-PCR tested positive again 3 months later (1 month before the patient's admission). The itchy, purple spots and lesions had spread to both legs and wrists within a few days (Figure 1). When the patient was enquired about possible alternative triggers, the patient did not describe any signs of infection, vaccination, stress, or medication in the previous weeks.

Dermatological examination at the outpatient clinic revealed polygonal, erythematous, violaceous, partially scaly papules and plaques on bilateral shin extensors and flexural wrists. No mucosal or nail involvement was detected. A 4 mm punch biopsy was obtained from one of the papules on the left shin, which showed typical findings of LP



**Figure 1.** Bilateral purplish papules on the extremities

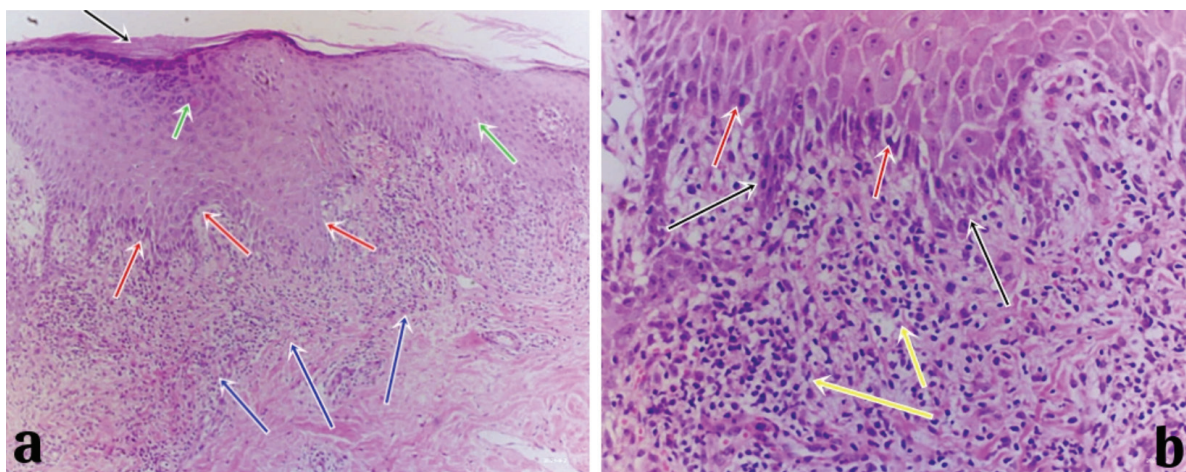
with epidermal orthohyperkeratosis without parakeratosis, acanthosis, vacuolar degeneration of the basal layer and basal apoptotic cells, so-called interface changes, and epidermal dyskeratotic cells. There was a band-like dense lymphocytic infiltrate in the superficial dermis with vascular proliferation and extravasated erythrocytes (Figure 2). The patient's anti-hepatitis C virus (anti-HCV) antibody was negative, and the serum 25-hydroxyvitamin D3 level was normal (40 ng/mL).

Treatment was initiated with clobetasol propionate 0.05% ointment and emollient containing 5% urea twice a day for 14 days. Subsequently, significant improvement was observed in the lesions (Figure 3).

## Discussion

Although it is unknown whether SARS-CoV-2 and COVID-19 play a role in the etiopathogenesis of dermatological diseases, 2-20% of cutaneous findings were reported<sup>5</sup>. According to a recently published systematic review, skin involvement findings of COVID-19 are varied and include maculopapular, urticarial, chilblain-like, vesicular, liveoid, and petechial lesions<sup>6</sup>. Some cases of LP and lichenoid dermatoses developing secondary to COVID-19 or its vaccination have also been reported<sup>7-10</sup>.

A 52-year-old female patient was reported to have annular LP on the right shin, and lesions developed 5 days after testing positive during the PCR for SARS-CoV-2 infection<sup>7</sup>. In another report, a 28-year-old female patient developed generalized red papules and plaques on her skin 1 week after COVID-19 diagnosis, and the biopsy result was compatible with lichenoid eruption, which is an interphase dermatitis containing necrotic subepidermal blister<sup>8</sup>. In a study examining oral lesions of 74 patients with COVID-19 in Turkey, aphthous-like ulcer was the most common lesion; LP was detected in 12 of the patients<sup>9</sup>. In another report, a 56-year-old woman with a personal history of LP 7 years ago that was successfully treated with topical therapy developed LP lesions in the ankles, flexural wrist, and forearms 48 h after the second dose of COVID-19 vaccine (Comirnaty, Pfizer, New York, NY, USA; BioNTech, Mainz, Germany)<sup>10</sup>.



**Figure 2.** (a) Punch biopsy showing typical findings which are common in lichen planus; hematoxylin and eosin (H&E) staining, x10 (orthohyperkeratosis, black arrow; interface changes, red arrows; band-like lymphohistiocytic infiltration, blue arrows; dyskeratotic cells in the epidermis, green arrows). (b) Interface changes with apoptotic cells and band-like lymphohistiocytic infiltrates, H&E x40 (interface changes, black arrows; apoptotic cells, red arrows; band-like infiltrates, yellow arrows)



**Figure 3.** Significant improvement in lesions observed post treatment

LP is a T-cell-mediated autoimmune inflammatory disease of unknown origin and presents as purple, shiny, polygonal, flat-topped papules on the skin that may be intensely pruritic. This condition has been associated with prior exposure to certain factors such as drugs, vaccines, and viruses (particularly HCV). Recently, it has also been associated with COVID-19<sup>11</sup>. However, the exact relationship between COVID-19 and LP remains unclear<sup>7</sup>. Furthermore, it is thought to result in lichenoid eruption by triggering basal keratinocyte apoptosis through the upregulation of CD8+ Th1 and increase in the levels of proapoptotic cytokines such as tumor necrosis factor- $\alpha$  and interferon- $\gamma$ <sup>11</sup>.

## Conclusion

Dermatologists may encounter patients who develop LP or various lichenoid dermatoses after COVID-19 or its vaccination. Further studies are required to confirm the relationship between COVID-19 and LP.

## Ethics

**Informed Consent:** It was obtained.

**Peer-review:** Externally peer-reviewed.

## Authorship Contributions

Surgical and Medical Practices: Z.M., K.D., D.Ü.K., Concept: Z.M., K.D., D.Ü.K., Design: Z.M., K.D., D.Ü.K., Data Collection or Processing: Z.M., K.D., D.Ü.K., Analysis or Interpretation: Z.M., K.D., D.Ü.K., Literature Search: Z.M., K.D., D.Ü.K., Writing: Z.M., K.D., D.Ü.K.

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