



Eccrine chromhidrosis in severe acute respiratory syndrome-coronavirus-2 virus infection treated with favipiravir

Favipiravir ile tedavi edilmiş şiddetli akut solunum yolu sendromu-koronavirüs-2 enfeksiyonunda ekrin kromhidroz

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Abstract

Coronavirus disease-2019 (COVID-19) caused by the severe acute respiratory syndrome-coronavirus-2, which became a pandemic, may have cutaneous findings. Eccrine chromhidrosis is a rare disorder characterized by the excretion of colored sweat via the eccrine sweat glands. We present eccrine chromhidrosis in two COVID-19 cases treated with favipiravir.

Keywords: Eccrine chromhidrosis, COVID-19, cutaneous findings

Öz

Koronavirüs hastalığı-2019 (COVID-19), deri bulguları olabilen şiddetli akut solunum yolu sendromu-koronavirüs-2'nin neden olduğu bir hastalıktır. Ekrin kromhidroz, ekrin ter bezleri yoluyla renkli ter atılımı ile karakterize nadir görülen bir hastalıktır. Favipiravir ile tedavi edilmiş COVID-19 enfeksiyonu olan iki ekrin kromhidroz olgusunu sunuyoruz.

Anahtar Kelimeler: Ekrin kromhidroz, COVID-19, deri bulguları

Introduction

The Coronavirus disease-2019 (COVID-19) is caused by severe acute respiratory syndrome-coronavirus-2, which primarily affects the respiratory tract epithelium. The disease started in China at the end of 2019, has infected a total of 230 million people, and has caused 4.7 million deaths so far¹. With increasing awareness about the disease, reports about the cutaneous symptoms of COVID-19 gained more attention. Studies have reported that COVID-19 is frequently seen with acral chilblain and pernio-like lesions, erythematous maculopapular rashes, viral exanthem, vesicular eruptions, urticarial eruptions, and livedoid lesions^{2,3}. Herein, we report two cases of eccrine chromhidrosis during the COVID-19 pandemic.

Case Reports

Case 1

A 31-year-old otherwise healthy man was examined in the dermatology outpatient clinic for abnormal palmar pigmentation for 2 days. He stated to have noticed patches on his hands upon waking up. Dermatologic examination findings included well-demarcated, irregularly edged brown, hyperpigmented patches on his left palm (Figure 1) and brown hyperpigmentation on the tip of the 5th finger of the right hand and on its nail bed. Apart from these newly developed lesions, he reported to have chronic hand eczema. He was admitted to the emergency department 2 weeks ago with complaints of muscle pain and sore throat.

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A nasopharyngeal swab was taken for polymerase chain reaction for severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2), and the result was positive. He was then diagnosed with COVID-19, without pneumonia or any other complications. He received 5 days of favipiravir orally and 10 days of subcutaneous enoxaparin treatment.

Laboratory test results were normal. The Wood examination was unremarkable. Exogenous pigmentation was ruled out because the patient denied history of contact with any substances, dye, henna, antiseptics, etc. A 4 mm punch biopsy was taken, and microscopic examination of the biopsy revealed compact orthohyperkeratosis



Figure 1. Dermatological examination (case 1). Well-demarcated, irregularly edged brown, hyperpigmented patches on hands

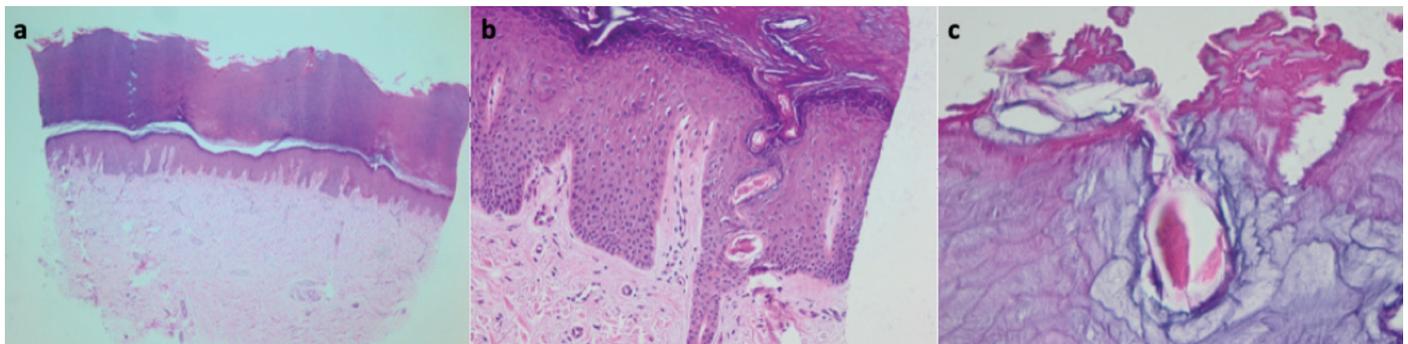


Figure 2. Histopathological examination (case 1). **(a)** Compact orthohyperkeratosis in the epidermis (hematoxylin and eosin staining, x40). **(b)** Dilated intracorneal eccrine duct (hematoxylin and eosin staining, x100). **(c)** Eosinophilic acellular material accumulation in the intracorneal eccrine duct (hematoxylin and eosin staining, x1000)

with acanthosis, elongation of the rete ridges, and dilation of the intracorneal eccrine ducts. Eosinophilic acellular material was seen in the intracorneal eccrine duct and intercellular area at the stratum spinosum. Accumulation of the exogenous pigment, materials, or secretions in eccrine sweat glands was not noted (Figure 2a-c). Thus, the patient was diagnosed with eccrine chromhidrosis and treated with topical emollient only. Five days later, the lesions markedly disappeared.

Case 2

A 28-year-old man was admitted to the emergency department for abnormal hand pigmentation for 1 day. Because he had COVID-19, he received the same regimen that ended 5 days ago (Figure 3). Given the clinical diagnosis of eccrine chromhidrosis, he was treated with topical emollient without histopathological examination. His complaints regressed completely within 3 days. Informed consent was obtained from the two patients.

Discussion

COVID-19 may present with cutaneous symptoms before/during and/or after the infection. Acral lesions, especially chilblain and pernio-like lesions, are common^{2,3}. The exact mechanism of cutaneous lesions is not fully understood.

Chromhidrosis is described as the occurrence of colored sweat and may be seen as apocrine or eccrine in origin. Eccrine chromhidrosis is a rare disorder characterized by the excretion of colored sweat via the eccrine sweat glands. Lipofuscin granules, hyperbilirubinemia, uremia, some medications (e.g., quinine, rifampicin, clofazimine, and methylene blue), metals (e.g., mercury and copper), and dyes are the causes of eccrine chromhidrosis. Pseudochromhidrosis also occurs when clear eccrine sweat becomes colored on the surface of the skin as a result of extrinsic dyes, paints, or chromogenic bacteria⁴. We present two cases of eccrine chromhidrosis in patients with COVID-19 that was treated with favipiravir.

Exogenous excretions of some drugs were known to cause eccrine chromhidrosis. Favipiravir is metabolized by aldehyde oxidase and xanthine oxidase, and blood uric acid level increases during the treatment⁵. This colored sweat may be related to uric acid, or it may be due to an unknown drug metabolite. Studies have shown that SARS-CoV-2 spike proteins are found in eccrine cells in chilblain-like skin lesions⁶, and Santonja et al.⁷ reported that sweat may be a source of contagion. To the best of our knowledge, no study has reported



Figure 3. Dermatological examination (case 2). **(a, b)** Well-demarcated, irregularly edged brown, hyperpigmented patches on hands

cases with eccrine chromhidrosis in COVID-19. The cause of such a presentation, as in the present case, i.e., whether it is due to the drug used or to infection, is unknown. However, it may be caused by SARS-CoV-2 spike proteins in eccrine sweat glands.

In conclusion, for eccrine chromhidrosis and other cutaneous signs of COVID-19, ultrastructural examinations, measurement of viral load and excretion of drug and/or drug metabolites, and detection of viral proteins may clarify the pathogenesis of these findings.

Ethics

Informed Consent: Informed consent was obtained from the two patients.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: M.G.K., Concept: M.G.K., G.I., S.K., Ş.Ö., Design: M.G.K., Ş.Ö., Data Collection or Processing: M.G.K., G.I., S.K., Analysis or Interpretation: M.G.K., Ş.Ö., Literature Search: M.G.K., Writing: M.G.K.

Conflict of Interest: No conflict of interest was declared by the authors.

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