

A Case Report of COVID-19-Related Dactylitis Combined with Chilblain-Like Acral Lesions

Fallbericht über eine COVID-19-bedingte Daktylitis in Kombination mit chilblain-ähnlichen Läsionen der Akren



Authors

Myroslava Kulyk¹, Anna Novytska², Ruslana Potemka², Oleksiy Ivashkivskiy², Tetyana Karasevska¹ , Halyna Mostbauer¹, Marta Dzhus¹

Affiliations

- 1 Department of Internal Medicine No 2, Bogomolets National Medical University, Kyiv, Ukraine
- 2 Rheumatology department, Olexander Clinical Hospital of Kyiv (Municipal Non-Profit Enterprise), Kyiv, Ukraine

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Georg Thieme Verlag KG, Rüdigerstraße 14,
70469 Stuttgart, Germany

Correspondence

Dr. Myroslava Sergiyvna Kulyk
Bogomolets National Medical University
Internal Medicine
Avenue Peremogy 29
01601 Kiv
Ukraine
Tel.: 380635676010
myroslavakulyk@gmail.com

ABSTRACT

This case report describes the occurrence of symmetrical dactylitis of toes combined with chilblain-like acral lesions in a 32-year-old female patient 19 days after a mild coronavirus infection. The article addresses existing problems of managing patients after COVID-19 in daily clinical practice. Scientific evidence is pointing to a growing number of cases of articular and skin involvement associated with COVID-19. However, it remains unclear what approaches to use in the treatment of such patients.

Introduction

Autoimmune and rheumatic diseases in patients after COVID-19 represent an urgent public health problem. COVID-19 may unmask previously undiagnosed rheumatic conditions or trigger and provoke the disease de novo. Several cases of acute COVID-19-associated arthritis have been reported and classified as reactive arthritis [1]. Clinical and laboratory manifestations of arthritis observed after SARS-CoV-2 infections are similar to reactive arthritis caused by other pathogens. However, post-virus arthritis remains a diagnosis of exception, which highlights the importance of completing laboratory and instrumental research for qualitative differential di-

agnostics. Complications of COVID-19 can manifest as joint pain in 31.4% of cases, but the occurrence of dactylitis combined with acral lesions has not been studied yet [2].

Case Report

A 32 year old female patient was admitted to the Rheumatology department, with clinical presentation of pain in the small joints of feet, redness, and swelling of toes.

One month earlier, there appeared pain and swelling of the 1st–5th toes on both feet. The patient was taking over-the-counter

non-steroidal anti-inflammatory drugs (NSAIDs) for a month, without improvement.

Two months earlier hospital admission the patient was diagnosed with COVID-19, with complaints of low-grade fever, weakness, fatigue, sore throat, and loss of smell, that lasted for five days; and positive polymerase chain reaction (PCR) of SARS-CoV-2 RNA confirmed the diagnosis. The patient was treated as an outpatient due to a mild course of the disease.

The patient denied previous chronic diseases, and unhealthy behaviours, including smoking. There was no evidence of psoriasis, uveitis, conjunctivitis, inflammatory bowel disease, back pain, or burning sensation when urinating. Family medical history was also unremarkable.

The clinical examination showed symmetric swelling of the 2nd–5th proximal interphalangeal (PIP) joints and the 1st interphalangeal joint (IP) of both feet with obvious signs of skin redness, decreased range of movement, and positive squeeze test (► **Fig. 1**). No clinical signs of sacroiliitis were revealed, and the Achilles' tendons were not inflamed as well. There range of the spinal motion did not show any limitations (BASMI score 0), and other joints were unaffected.

The laboratory examination showed normal complete blood count, erythrocyte sedimentation rate of 14 mm/h (Westergren assessment), C-reactive protein of 4 mg/l (reference values 0–5 mg/l), uric acid of 0.2 mmol/l (reference values 0.24–0.51 mmol/l), coagulation parameters and D-dimer within limits, rheumatoid factor (RF) of 7.0 IU/ml (reference values 0–14 IU/ml) and anti-cyclic citrullinated peptide antibodies (ACCP) of 0.5 IU/ml (reference values 0–15 IU/ml). HLA-B27, HBsAg, HCV and HIV were negative, complement fractions C3, C4 within normal limits, screening for antinuclear antibodies (ANA) normal (1:80). The Chlamydia trachomatis DNA was not revealed in the PCR of the urogenital sample.

The hands and feet X-ray did not show any pathologic findings. The MRI of the sacroiliac joints showed no signs of sacroiliitis.

To exclude vascular abnormalities, nail fold capillaroscopy was conducted. The examination showed U-shaped loops of capillaries, approximately the same width and length, evenly distributed, with single dark mass that resembles hemosiderin deposits due to

micro-thrombosis and vasospasm with a normal number of capillaries. The ultrasound of the small joints of the feet revealed synovitis with increased vascularization of the 2nd–5th of the PIP joints and the 1st IP joint of both feet, tendovaginitis of the flexors of the fingers, and tendinitis of the extensor of the first finger.

Based on the above-mentioned, the patient was diagnosed with COVID-19-related undifferentiated dactylitis, combined with chilblain-like acral lesions, HLA-B27-negative.

A single injection of betamethasone 0,3 ml into the 3rd-5th PIP joints, and NSAIDs was recommended. Taking into account the acral skin lesions and the results of nailfold capillaroscopy with the signs of micro-thrombosis and vasospasm, aspirin 75 mg per day was added to the therapy.

During the second examination, one month after hospital admission, the patient noticed reduction in swelling and redness of the skin, but complained of recurrent pain in the small joints of the feet. The manifestations of dactylitis still persisted (► **Fig. 2**). There were no deviations from normal values in laboratory examination. Repeated ultrasound of the feet showed persistent tendovaginitis of the flexors of the fingers and decreasing intensity of synovitis of the 2nd-5th PIP joints and the 1st IP joints on both sides.

Due to polyarticular synovitis and tendinitis persisting over 6 weeks despite therapy, we started treatment with sulfasalazine (2 g per day), and NSAIDs (etoricoxib 90 mg daily for 4 weeks). After 6 weeks, regression of exudative changes, pain, and swelling of the small joints of the feet was detected.

Discussion and conclusions

The variety of joint and skin symptoms after a coronavirus infection is a major challenge for the rheumatologist.

We used several clinical cases of COVID-associated dactylitis to understand possible approaches to treatment. A similar case of dactylitis associated with COVID-19 resolved after taking naproxen and, unlike our case, did not require additional therapy [3]. The first described clinical case of COVID-19-induced polyarthritits of the small joints of the foot started 8 days after infection and also disappeared after administration of NSAIDs [4].



► **Fig. 1** Pronounced dactylitis of both feet with chilblain-like acral lesions.



► **Fig. 2** Residual manifestation of dactylitis.

Another interesting case series was published, which presented seven clinical cases including the authors' data. Thus, the authors noted that in two cases, the "typically" affected joints were the knees, in the third one – the ankles, and in the fourth – the small joints (left 1st MTP, PIP, DIP, and right 2nd PIP, and DIP), and in the authors' described clinical case – the knee and ankle, and only in one case – tendinitis of the 2nd, 3rd and 4th extensor of the right hand was noted [5]. Notably, patients in six out of seven cases were treated with NSAIDs, two of them with intra-articular glucocorticoids, and one case resolved spontaneously without any therapy.

The uniqueness of our clinical case is in the fact that the patient had not only dactylitis, but also the obvious chill-blain acral lesion, signs of vasospasm, and micro-thrombosis by nailfold capillaroscopy. For this reason, we insist that this case should be considered not only as an articular involvement but also as a skin-vasculopathy one. Therefore, we drew attention to the experience of our colleagues-dermatologists. Thus, Spanish dermatologists presented their experience of treating the skin lesions associated with COVID-19 [6]. The present article investigates the connection between different patterns of skin involvement and COVID-19. They described twenty patients, six of them with acral erythema, seven patients with purpuric maculopapular, four patients with dactylitis patterns, and three patients with mixed patterns. All these clinical presentations in children and adolescents were not characterized by any hematologic and serologic changes as well.

The most common skin manifestation is a chilblain-like acral lesion, which is often associated with milder disease course of COVID, and is typical for children and young adults [7]. The COVID-19-associated cutaneous changes are not defined by a unified term, and are called "COVID toes", or "chill-blain acral lesions", or "red fingers" in different reviews and case reports. The mechanism of development is still unclear, and an evidence-based approach to treatment has not been developed yet [8].

There are still many clinical questions that need to be answered:

- When should the COVID-related dactylitis therapy be started?
- How long should NSAIDs be prescribed before starting the DMARDs?

- Is it relevant to use the same approach as for post-viral reactive arthritis?
- What approaches should be used in the mixed cases of dactylitis and microangiopathy?
- What are the long-term outcomes of this condition that should be expected?

Further observations should clarify whether these cases are to be interpreted as manifestations of reactive arthritis or represent the beginning of a chronic inflammatory process, the onset of which was merely provoked by the viral infection.

The article describes the clinical observation of the onset of dactylitis and acral lesions after COVID-19. Our clinical case demonstrates the complexity of diagnosis after COVID-19, and the difficulty in choosing therapy for patients with dactylitis, acral lesions, and chronic duration of the disease. Finally, this clinical case formulates a series of questions and seeks to understand what approach will be most beneficial for the patient.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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