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# Catastrophic acute bilateral lower limbs necrosis associated with COVID-19 as a likely consequence of both vasculitis and coagulopathy

## Case report

An 83-year-old man was admitted on the 3 of April 2020 for respiratory distress. He had presented with fever the 20th of March. On the 2nd of April, he had an acute pain of both legs associated with discolouration. He was admitted to the emergency room on the following day. His temperature was 38°C, and he was dyspnoeic despite oxygen. He had bilateral and symmetrical well limited black skin on both legs (Fig. 1).

The patient had multiple comorbidities including obesity, type 2 diabetes mellitus, hypertension, mesenteric ischaemia in 2007, distal arteriopathy and ischaemic cardiopathy treated by coronary bypass in 2015. He had the following treatment: acetylsalicylic acid, fluindione, ramipril, bisoprolol, furosemide and prednisolone 7.5 mg per day (for pseudopolyarthritides rhizomelic).



**Figure 1** Acute bilateral lower limb necrosis.

Laboratory tests showed a C-reactive protein concentration of 246 mg/L (normal range, <5 mg/L). Complete blood count showed white blood cell count  $19 \times 10^9/L$  (normal range,  $4–12 \times 10^9/L$ ) and neutrophils  $16 \times 10^9/L$  ( $1.5–8.5 \times 10^9/L$ ), and a lymphopenia  $0.92 \times 10^9/L$  ( $1–4 \times 10^9/L$ ). D-dimer was 7650 ng/L (normal range < 500 ng/L), and platelet count down to  $148 \times 10^9/L$  (normal range  $150–500 \times 10^3/L$ ). Nasal tests for influenza A and B viruses were negative. Bacterial blood cultures were negative. The computed tomography scan presented multiple ground-glass opacities with 80% of the lung affected. There was no sign of pulmonary embolism. The patient was diagnosed with COVID-19 on the basis of positive RT-PCR analysis of sputum.

During the hospitalization, we observed a coagulation degradation with disseminated intravascular coagulation (DIC) with decrease of platelet  $100 \times 10^9$  and a decrease of fibrinogen 0.52 g/L normal range 2–3.93 g/L and DDIMERE 6900 ng/L was also increased normal <500 ng/L. There was no antiphospholipid syndrome (lupus anticoagulant, anticardiolipin and anti-beta2-glycoprotein1 antibodies were negative). His condition worsened and the patient died.

Our patient had a catastrophic acute bilateral legs and foot necrosis during the course of COVID-19 infection. Zhang *et al.*<sup>1</sup> reported 7 critical COVID-19 patients with acro-ischaemia in a single centre in Wuhan. All had acro-ischaemia presentations including finger/toe cyanosis, skin bulla and dry gangrene. D-dimer, fibrinogen and fibrinogen degradation product were significantly elevated in most patients, and 4 patients were diagnosed with definite DIC. Zang *et al.*<sup>2</sup> proposed antiphospholipid antibodies as the

source of coagulopathies. A few cases of digital ischaemia and necrosis have also been reported in association with coagulopathy.<sup>3,4</sup> Bellosta et al.,<sup>5</sup> who conducted an observational study of 20 patients infected by COVID-19 and treated for acute lower limb ischaemia, suggested a higher incidence of acute limb ischaemia in COVID-19 positive patients. The literature strongly supports a link between severe COVID-19 and coagulopathy.<sup>3-6</sup> Our patient had coagulopathy abnormalities similar to DIC but no antiphospholipid antibodies. It is likely that the distal arteriopathy of our patient played an important role in the severity of the clinical evolution.

In contrast to such severe lesions, acrosyndromes consisting of acral eruptions of erythematous-violaceous papules and macules, with possible bullous evolution, or digital swelling localized on the feet, hands or both reported as chilblain lesions have been reported in non-severe or paucisymptomatic patients.<sup>7-9</sup>


This observation led authors such as Suarez-Valle et al.<sup>9</sup> to conclude that « there is a continuum spectrum related to acro-ischaemic lesions, ranging from mild chilblain-like lesions to dry gangrene». However, we postulate that these lesions are not a continuum but are distinct in one important point. Both Chilblain-like and acro-ischaemic lesions share a vasculitis. Indeed, Varga et al.<sup>10</sup> demonstrated that COVID 19 could cause viral endotheliitis. However, acro-ischaemic lesions are the consequence of the malignant synergy of the vasculitis and severe coagulopathy.

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The family of the patient in this manuscript have given written informed consent to the publication of their case details.

### Conflicts of interest

This manuscript has not been published and is not under consideration for publication elsewhere. We have no conflicts of interest to disclose.

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## Cutaneous involvement during COVID-19 pandemic: an emerging sign of infection

Dear Editor

Since December 2019, SARS-CoV-2 epidemic has spread all over the world.<sup>1</sup> To date, few reports regarding the cutaneous involvement in COVID-19 have been published.<sup>2,3</sup> Herein, we report a four cases series describing skin lesions probably related with COVID-19. The case 1 was a 66-year-old Caucasian female with a history of hypertension and dyslipidaemia. When hospitalized, she showed fever, nasal congestion and pneumonia symptoms. A chest TC displayed bilateral interstitial lungs' involvement and a nasopharyngeal swab confirmed SARS-CoV-2 infection. At day 6 of hospitalization, an asymptomatic erythematous pomphoid skin rash occurred on the trunk (Fig. 1a). The case 2 was a 60-year-old Caucasian female tested positive for SARS-CoV-2. A chest TC confirmed lungs' involvement. Patient's comorbidities were diabetes and hypertension. When hospitalized, systemic symptoms included headache, fever, nasal congestion and cough. At day 9 of hospitalization, the patient referred abdomen pruritus. After 24 h,