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Severe acute dried gangrene in COVID-19 infection: a case report

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Abstract. – OBJECTIVE: Coronavirus disease 2019 (COVID-19) related coagulopathy may be the first clinical manifestation even in non-vasculopathic patients and is often associated with worse clinical outcomes.

CASE PRESENTATION: A 78 years old woman was admitted to the Emergency Unit with respiratory symptoms, confusion and cyanosis at the extremity, in particular at the nose area, hands and feet fingers. A nasal swab for COVID-19 was performed, which resulted positive, and so therapy with doxycycline, hydroxychloroquine and antiviral agents was started. At admission, the patient was hemodynamically unstable requiring circulatory support with liquids and norepinephrine; laboratory tests showed disseminated intravascular coagulation (DIC). During hospitalization, the clinical condition worsened and the cyanosis of the nose, fingers, and toes rapidly increased and became dried gangrene in three days. Subsequently, the neurological state deteriorated into a coma and the patient died.

DISCUSSION: In severe cases, COVID-19 could be complicated by acute respiratory disease syndrome, septic shock, and multi-organ failure. This case report shows the quick development of dried gangrene in a non-vasculopathic patient, as a consequence of COVID-19's coagulopathy and DIC.

CONCLUSIONS: In our patient, COVID-19 related coagulopathy was associated with poor prognosis.

Key Words:
COVID-19, DIC, Coagulopathy, Septic shock.

Introduction

Coronavirus disease 2019 (COVID-19) is a respiratory tract infection caused by a newly emergent coronavirus, SARS-CoV-2, that was first recognized in Wuhan, China, in December 2019. Genetic sequencing of the virus suggests that SARS-CoV-2 is a beta-coronavirus closely linked to the SARS virus[1].

While most people with COVID-19 develop mild or uncomplicated illness, approximately 14% develop severe disease requiring hospitalization and oxygen support and 5% require admission to an intensive care unit (ICU)[1]. In severe cases, COVID-19 can be complicated by acute respiratory disease syndrome (ARDS), sepsis and septic shock, multi-organ failure, including acute kidney injury and cardiac injury[2].

Case Presentation

A 78 years old woman was admitted to the Emergency Unit complained fever, cough, dyspnea and progressive confusion since few days. In medical history was reported hypertension and diverticulosis with previous intestinal resection and pacemaker implantation for bradyarrhythmia.

On admission she was hemodynamically unstable (blood pressure: 85/40 mmHg; heart rate: 95 beats per minute) and respiratory failure was detected [respiratory rate: 21 breaths per minute, peripheral saturation: 90% with fraction of inspired oxygen (FiO_2) of 90%]. On assessment, the patient was afebrile, sleepy but awakening, and Glasgow Coma Scale (GCS) was 11. At chest examination vescicular murmure was diffusely reduced with bibasal crackles, heart sounds were rhythmic, abdominal examination were normal without organomegaly or lymphadenopathy.

Skin and mucous membranes were dry, there was cyanosis at the extremity, in particular at nose area, hands and feet fingers.

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Arterial blood gas analysis revealed hyperlactatemia (lactates 4.0 mmol/L, normal value 0.4-0.8 mmol/L).

Laboratory examination showed neutrophilic leukocytosis with lymphopenia (white blood cell count of 15.56 × 1000/mcl, normal value 4-10 x 1000/mcl; neutrophils 91%, lymphocytes 3.2%), severe thrombocytopenia (platelet count 58.000/mcl, normal value 141-362 × 1000/mcl), elevated inflammatory indices (C-reactive protein 18.95 mg/dL, normal value 0.0-0.80 mg/dl; procalcitonin 16.68 ng/mL, normal value 0.0-0.50 ng/ml; lactate dehydrogenase 3801 U/L, normal value 230-500 U/l; ferritin 1469 ng/mL, normal value 22-322 ng/ml). Acute kidney injury (serum creatinine 3.28 mg/dl, normal value 0.7-1.2 mg/dl), elevation of alanine aminotransferase (462 U/L, normal value 0-49 U/l) and myocardial enzyme (troponin 824 ng/L, normal value 0-58 ng/L) were found.

Coagulation screening showed, moreover, prolonged prothrombin time (PT) (38.3 seconds) and PT ratio (2.83), elevated D-dimer level (> 40 mcg/ml, normal value 0.0-0.50 mcg/ml), low level of antithrombin III protein (ATIII) (53%, normal value 80-120%) and fibrinogen (120 mg/dl, normal value 150-450 mg/dl), suggesting a disseminated intravascular coagulation (DIC).

At chest X-ray there was an accentuation of the interstitial design and nuanced lung thickening at left side. Therefore, central venous catheter was positioned and circulatory support with norepinephrine and liquids was started. Since it was not possible to initially exclude a concomitant bacterial infection, empirical treatment with antibiotics was associated previous collection of hemocolture and urinocolture that subsequently resulted negative.

A nasal swab for COVID-19 was also performed and resulted positive, and so, therapy with doxycycline, hydroxychloroquine, and antiviral agent (darunavir/cobicistat) was started.

Atrial fibrillation with rapid ventricular response was detected during monitoring a few hours after hospitalization. The echocardiogram, performed in emergency, was negative for hypokinesia or dyskinesis and no indirect signs of pulmonary embolism were observed. Color doppler sonography of the lower limbs was negative for bilateral deep venous thrombosis. An antiarrhythmic therapy with amiodarone was started.

During hospitalization, clinical conditions, particularly respiratory failure and laboratory tests worsened; the cyanosis of the nose, fingers and toes rapidly increased and became dried gangrene in three days (Figures 1-3). Subsequently, the neurological state deteriorated into coma (GCS 8) and patient died.

Discussion

As recent studies[3-5] described, severe COVID-19 is commonly complicated with coagulopathy and markedly elevated D-dimer levels are associated with poor prognosis. However, some cases of gangrene in inotropic use are described[6]. The focus of our case report is the quick development of dried gangrene in a non vasculopathic patient, which started at home before of any drugs administration.

Probably the concomitance of DIC, COVID-19's coagulopathy and use of inotropics might be the reason of the development and quickly worsening of dried gangrene in our non-vasculopathic COVID-19 patient.

Conclusions

COVID-19's coagulopathy and DIC can be among the first manifestations of COVID-19 dise-

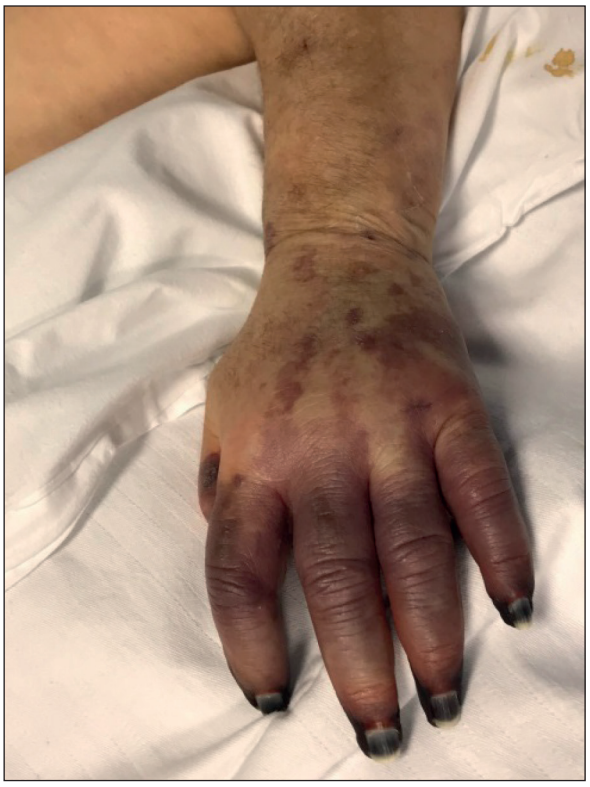

Figure 1. Cyanosis and initially dried gangrene to the top of the hands's fingers.

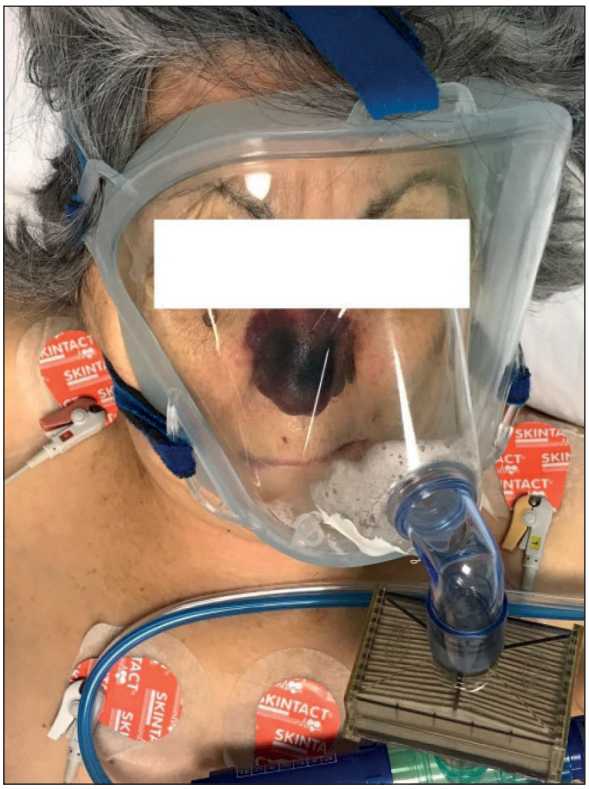

Figure 2. Cyanosis and initially dried gangrene to the top of nose.

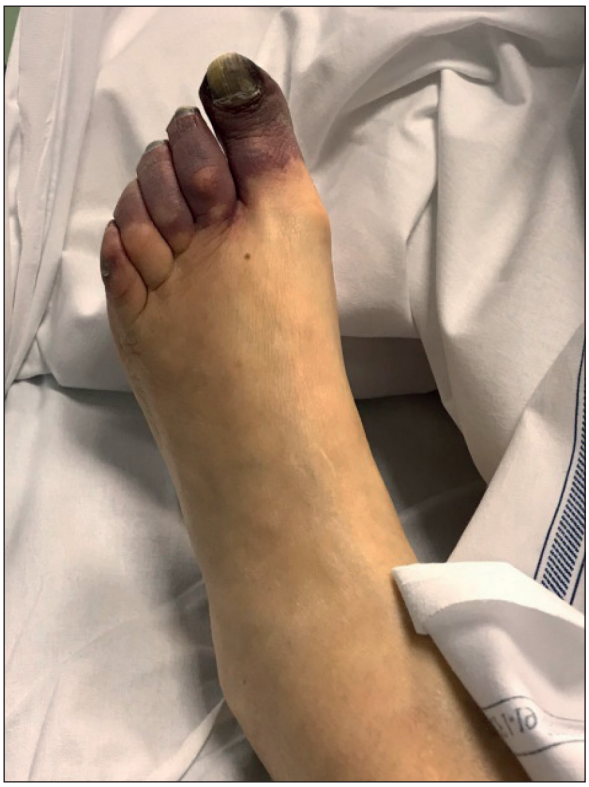

Figure 3. Cyanosis and initially dried gangrene to the top of feet fingers.

ase and they are probably associated with a rapid deterioration of clinical conditions and a worse clinical outcome even in non-vasculopathic patients.

Conflict of Interest

The Authors declare that they have no conflict of interests.

Statement of Human and Animal Rights

All procedures performed in the study were in accordance with the Ethical Standards of the Institutional and/or National Research Committee and with the 1964 Helsinki declaration and its later amendments or comparable Ethical Standards.

Informed Consent

The patient was informed of the scientific and clinical interest of her disease and was informed of this anonymous publication. She gave an informed verbal consent to the anonymous publication.

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