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## Fever with rash in COVID-19: viral exanthema or secondary lesions?

Dear Editor,

COVID-19 was originated in Wuhan, China, and has developed into a pandemic since late 2019. The virus possesses powerful pathogenicity and transmissibility. Many open questions remain, including the description of potential involvement of other organs than the respiratory tract.<sup>1</sup> Most patients have mild influenza-like symptoms. A minority, especially patients with chronic lung disease, develops lethal disease including severe pneumonia, pulmonary oedema, rapidly developing acute respiratory distress syndrome (ARDS), multiple organ failure and septic shock.<sup>2</sup> From a study conducted in Italy on 88 COVID-

19-positive patients, 20.4% had skin involvement, which did not correspond to disease severity. Of these, 9% developed skin manifestations at symptom onset and 11.3% after hospitalization. Erythematous rash, widespread urticaria and vesicles were found mostly on the trunk, which resolved spontaneously. Itching was absent or insignificant.<sup>3</sup>

Other coronaviruses can cause skin symptoms, including acute haemorrhagic oedema of infancy associated with coronavirus-NL63 infection in an 8-month infant.<sup>4</sup> Coronavirus OC43/HKU1 was associated with Kawasaki disease<sup>5</sup> resulting in hyperaemia of the tongue and oral mucosa, bilateral bulbar conjunctival injection without exudate, maculopapular rash on trunk and abdomen, oedema on medial region of feet and facial pallor.

We have seen two COVID-19 patients with skin symptoms. We observed skin manifestations in those patients, however



Figure 1 Diffuse, irregular shaped, partially confluent weals



Figure 2 Disseminated, variable size, erythematous patches throughout the body, which fade on pressure

without being able to ascertain a causal connection with the infection. Our intent is to make readers aware of the observed skin symptoms, and we strive to collect additional cases to construct a clearer picture of COVID-19's potential skin manifestations.

Case 1: A 74-year-old Wuhan man presented with fever (100.4 F), dry cough and fatigue. A CT scan of the lung showed ground-glass changes. The throat swab was positive for COVID-19 nucleic acid. Treatment included hydroxychloroquine, lopinavir/ritonavir, thymosin and methylprednisolone. The rash appeared on the 12th day after admission. In physical examination, the patient had diffuse, irregular shaped, partially confluent weals throughout the body (Fig. 1). The patient was diagnosed with COVID-19 pneumonia and secondary urticaria of undetermined aetiology.

Case 2: A 65-year-old subfebrile (98.6 F) Wuhan woman had dry cough, fatigue and diarrhoea (four times a day). A CT scan showed bilateral ground-glass changes,<sup>6</sup> which is the primary tool for Covid-19 diagnosis in the epidemic area. Swabs did not detect SARS-CoV-2. One day after admission, we observed multiple, disseminated, variable size, erythematous patches throughout the body, which faded on pressure. Few patches were confluent (Fig. 2). We considered the symptoms as unspecific viral rash due to COVID-19 and included as differential diagnosis a drug eruption due to the antineoplastic drug ruxolitinib.

Taken together, we observed in 2 COVID-19 patients one unspecific, potentially viral rash and one case of urticaria. Unfortunately, we lack biopsies, which were deplorably not taken due to prioritizing emergency measures and patient isolation. Apart from our observation, no other skin symptoms have been observed in COVID-19 patients, but secondary rashes due to drug treatment and the like are to be expected. We postulate that in some cases, COVID-19 may have cutaneous symptoms, e.g. viral exanthema that may pass unnoticed for being asymptomatic, rapidly evolving and/or self-limited. We urge colleagues caring for COVID-19 patients to examine the skin as a potential site of viral pathologic changes.

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### Conflict of Interest

None.

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We confirm that the manuscript has been read and approved by all the authors, that the requirements for authorship as stated earlier in this document have been met and that each author believes that the manuscript represents honest work<sup>1</sup>.

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## COVID-19 in a melanoma patient under treatment with checkpoint inhibition

Editor,

SARS-CoV-2 poses new challenges in all aspects of health care.<sup>1</sup> Patients with pre-existing cardiovascular conditions are at higher risk of developing severe symptoms and worse outcome.<sup>2</sup> Data also suggest that patients with cancer are particularly vulnerable,<sup>2,3</sup> but differences between tumour entities and cancer treatments may exist. Little is known how cancer treatment engaging immune checkpoints affects the course of COVID-19.

We present the case of a 47-year-old woman contracting COVID-19 while being under adjuvant immunotherapy with the PD1-antagonist nivolumab for fully resected stage IV melanoma. The patient was first diagnosed with metastatic melanoma in August 2019 and started adjuvant immunotherapy with nivolumab 480 mg i.v. every 4 weeks in November 2019. No side effects were noted. One week after receiving anti-PD-1 treatment on March 12th 2020, the patient reported symptoms of an upper respiratory tract infection (sore throat, cough, headache), followed by 3 days of fever (max. 39.4°C). PCR-testing for SARS-CoV-2 was positive on March 23 (Fig. 1).