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LETTER TO THE EDITOR

Reproducible leukocytoclastic vasculitis following severe acute respiratory syndrome coronavirus 2 vaccination

Dear Editor,

There exists increasing real-world evidence on adverse events associated with the use of the new coronavirus disease 2019 (COVID-19) vaccines. Similar to the natural COVID-19 infection, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) vaccines appear to have also the potential to induce a broad spectrum of cutaneous adverse events.[1]

We report a 47-year-old male who noticed aggregated reddish spots on his ankles occurring approximately 3 days after his first Comirnaty® vaccination. During the following next 2 weeks, the skin lesions completely resolved without any treatment. Five weeks after his first vaccination, he received the second shot of Comirnaty. Four days later, the same lesions reappeared on his lower legs and spread to his trunk and upper extremities (Figure 1a). Apart from intermittent abdominal pain, he had no subjective symptoms to report. On examination, there were disseminated symmetrically distributed purpuric papules on his legs and forearms. Complete work-up (e.g., infection serologies [e.g., hepatitis B and C], antibody tests [e.g., antiphospholipid antibodies, antinuclear autoantibodies], X-ray, abdominal ultrasound) did not reveal relevant pathologies, except for elevated C-reactive protein of 16.1 mg/L (normal, <5.0), mild proteinuria of 0.32 g/day (<0.14), and slightly decreased glomerular filtration rate. Skin biopsies taken from the right lower leg revealed dermal inflammatory infiltrates consisting of lymphocytes and neutrophils. Heavy infiltrates were also seen in the walls of small vessels and their vicinity with leukocytoclasis (Figure 1b,c). Direct immunofluorescence only revealed C3/C4 deposits. Together, a diagnosis of leukocytoclastic vasculitis (LCV) was made. Because of possible systemic involvement, we treated the patient with i.v. prednisolone taper starting with 1.5 mg/kg bodyweight. After 2 weeks, his skin and systemic symptoms fully resolved.

In the literature, we identified six patients (three males, three females) who developed LCV after the COVID-19 vaccination.[1–5] In five cases, the mRNA-based vaccine Comirnaty was used,[1,2,4,5] in one case an inactivated vaccine.[3] In most cases, characteristic symmetrical purpuric palpable papules were observed a few days after the first shot. In contrast, Akinosoglou *et al*.[4] and our research group[1] also reported patients who presented with an annular rash on the elbows and chilblain-like lesions on the toes, respectively. However, a skin biopsy showed a small vessel vasculitis, possibly of leukocytoclastic origin.[1,4] In the present case, the causal link between the COVID-19 vaccination and LCV is very likely since the skin lesions appeared after the first vaccination

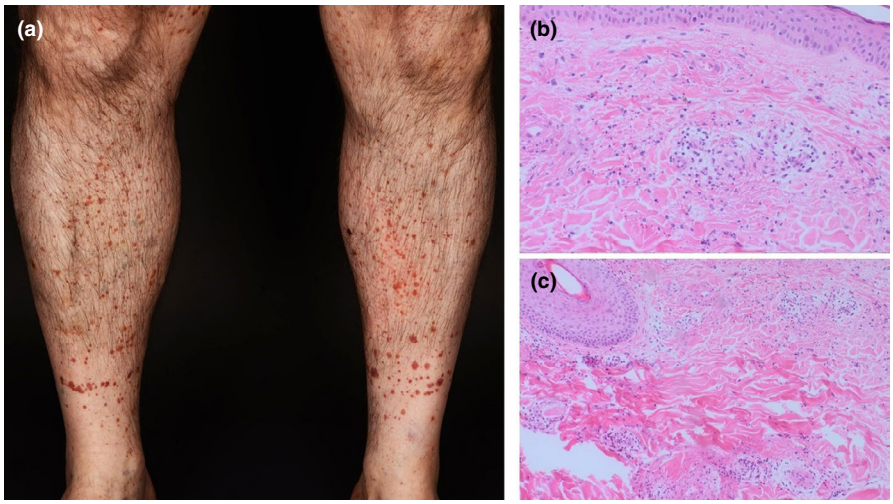

FIGURE 1 (a) A male patient is shown with disseminated palpable purpuric lesions on both lower legs briefly developing after the second shot of Comirnaty®. Hematoxylin–eosin staining of a biopsied lesion revealed inflammatory infiltrates in the dermis consisting of lymphocytes and neutrophils. (b,c) Inflammatory infiltrates were also seen in the walls of small vessels and their vicinity with leukocytoclasis consistent with a diagnosis of leukocytoclastic vasculitis (original magnifications, [b] ×250, [c] ×100). Moreover, fibrinoid necrosis and extravasation of red blood cells were observed in other sections

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and reoccurred after the second shot. Similarly, Cohen *et al*.[5] reported a female patient with a previous history of LCV which was in complete remission for 2 years. Twenty-four hours after her first Comirnaty vaccination, she experienced a flare of LCV on her lower legs. Two days after the second Comirnaty vaccination, the vasculitis re-exacerbated with disseminated purpuric papules on her legs and lower trunk.[5]

Similar to other vaccines, there are numerous cutaneous reaction patterns that may occur following COVID-19 vaccination, whereas many of skin lesions are of immunological/autoimmunological nature. Molecular mimicry exists between SARS-CoV-2 and human components and may thus explain some COVID-19 pathologies as well as vaccine-induced adverse skin reactions such as LCV.[1]

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CONFLICT OF INTEREST

None declared.

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