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A case of psoriatic spondyloarthritis exacerbation triggered by COVID-19 messenger RNA vaccine

Editor,

The coronavirus disease (COVID-19) vaccines have been rapidly delivered to prevent the spread of the disease. In Japan, the mRNA vaccines 'BNT162b2' (Pfizer–Biotech) and 'mRNA-1273' (Moderna) have been approved. Although the vaccines have effectively reduced the morbidity and severity of the disease, some patients developed autoimmune phenomena, such as thrombosis with thrombocytopenia and myocarditis.[1,2] Also, exacerbations occurred in psoriasis patients after their vaccination.[3,4] We report a case of psoriatic spondyloarthritis (SpA) exacerbation triggered by COVID-19 mRNA vaccine.

The patient was a 30-year-old man with a history of plaque psoriasis, well-controlled with topical treatment, for more than 10 years. He experienced lower back pain for several years, but he did not take any medications. Aside from that, the patient had no other subjective complaints. He had an unremarkable family history. Prior to vaccination, the patient reported no allergies, new medications or infectious symptoms. He received the second dose of the Moderna mRNA vaccine by the end of September 2021. One day following his second vaccination, the patient developed a low-grade fever of 37.5°C. Also, the patient's psoriatic lesions, scattered throughout his entire body, worsened. This was associated with severe neck and hip pain, which appeared two days after the vaccination. He visited another hospital 40 days after the vaccination because of persistent fever with neck and hip pain. The blood tests showed a high C-reactive protein (CRP) level, whilst the whole-body computed tomography scan showed no specific lesions. His COVID-19 antigen test was negative. He received loxoprofen, but it failed to alleviate his pain. Therefore, he was referred to our department 62 days after the vaccination.

On admission, he had normal vital signs. Physical examination revealed erythema with scaling throughout his entire body. Scalp and nail lesions were also observed (Fig. 1). His Psoriasis Area Severity Index, evaluated by a dermatologist, was 23.1. Joint swelling and tenderness were not noted, but he had enthesitis with a Spondyloarthritis Research Consortium of Canada Enthesitis Index of 8. The sacroiliac compression test was bilaterally positive. Blood testing revealed a CRP level of 4.90 mg/dL and an erythrocyte sedimentation rate level of 56 mm/h. Tests for bacterial and viral infection markers, antinuclear antibody, rheumatoid factor, anticyclic citrullinated peptide antibody and human leukocyte Antigen-B27 were negative. Radiography of sacroiliac joint showed bilateral narrowing space. Cervical magnetic resonance imaging (MRI) showed enhancement effects on cervical interspinous ligament and sacroiliac MRI showed bilateral sacroiliitis (Fig. 2). Based on these findings, he was diagnosed with psoriatic SpA exacerbation, and he was treated with ixekizumab, to which he had a good clinical response.

To the best of our knowledge, this is the first report of psoriatic SpA exacerbation triggered by COVID-19 mRNA vaccination. The mechanism behind psoriasis exacerbation after COVID-19 vaccination is likely similar to that of other vaccines. Vaccination induces interleukin (IL)-6, which stimulates T-helper 17 cells to produce IL-22, a significant contributor to keratinocyte proliferation in psoriasis.[5,6]

In one report, all patients experienced psoriasis exacerbation within 14 days after their vaccination. Most exacerbations occurred after the second vaccination dose.[3,4] However, there were no significant differences regarding the exacerbation of psoriasis between the vaccine types.[3,4]

Although a high safety profile against the COVID-19 mRNA vaccine was observed in almost all psoriasis patients, and psoriasis patients should be recommended to receive COVID-19 vaccine,[7,8] factors associated with psoriasis exacerbation after the COVID-19 vaccination have not been clarified yet. Further prospective studies are warranted to investigate the exacerbation in patients with psoriasis after COVID-19 mRNA vaccine. In conclusion, clinicians should be carefully aware of the occurrence of psoriasis exacerbation after COVID-19 vaccination.

Acknowledgement

The patient in this manuscript has given written informed consent to the publication of his case details.

Conflicts of interest

All authors declare no conflicts of interest.

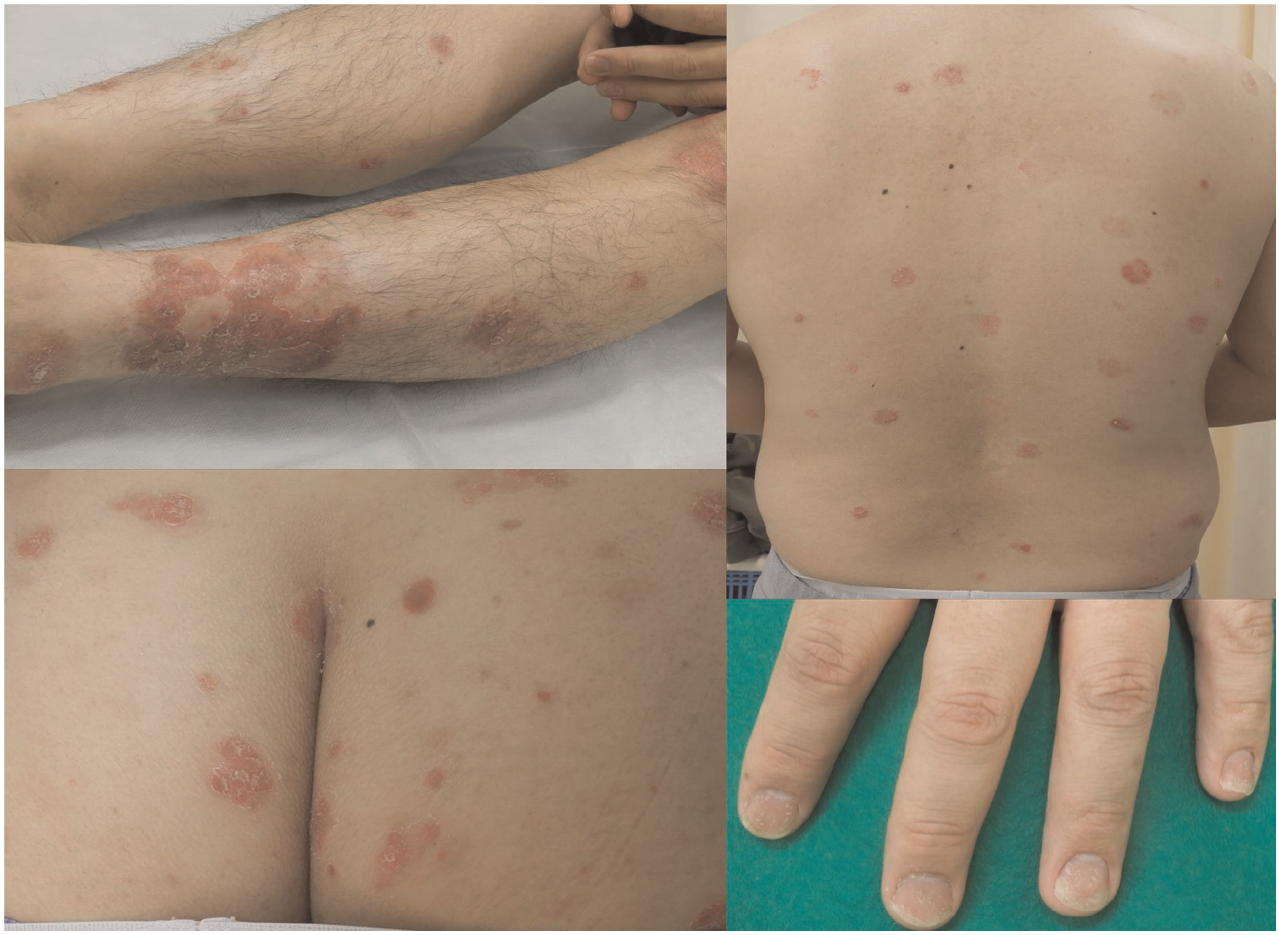

Figure 1 Skin findings showed worsening psoriatic lesions. MRI, Magnetic resonance imaging.

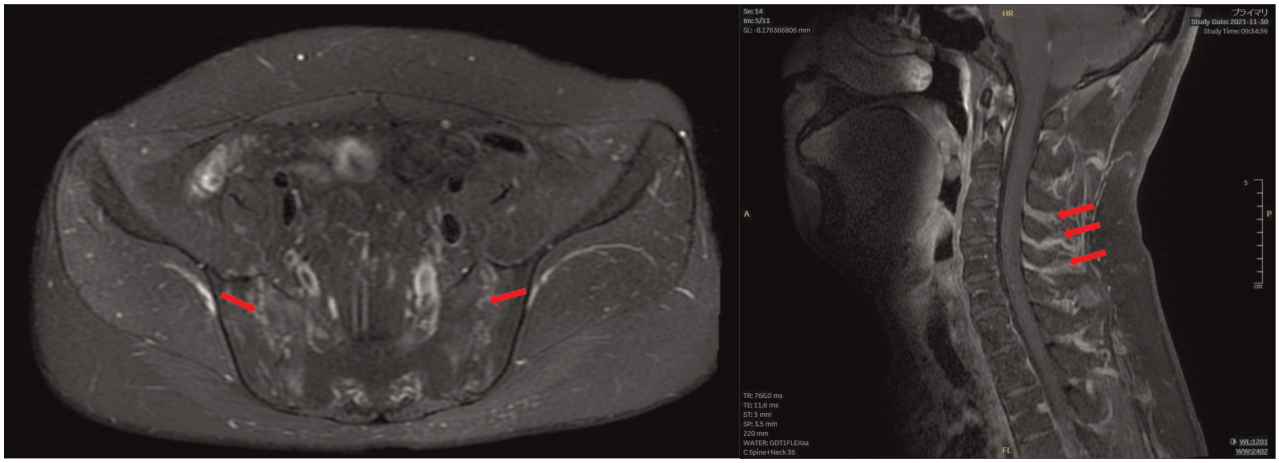

Figure 2 Sacroiliac MRI showed bilateral sacroiliitis, and cervical MRI showed enhancement effects on cervical interspinous ligament.

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Author contributions

All authors approved the final version of this manuscript. SO had full access to all the data. SH reviewed the skin findings. SO was responsible for the organization and coordination of the case.

Data availability statement

The data underlying this article will be shared upon reasonable request to the corresponding author.

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Unilateral linear purpuric rash heralding SARS-CoV-2 vaccine-induced immune thrombotic thrombocytopenia

Dear Editor,

Vaccine-induced immune thrombotic thrombocytopenia (VITT) has been a life-threatening complication since adenovirus-vectored vaccines, including ChAdOx1 nCoV-19 (AstraZeneca) and Ad26.COV2.S (Johnson & Johnson/Janssen), were used against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).[1] VITT is characterized by thrombocytopenia, thrombosis, and presence of anti-platelet factor 4 (anti-PF4) antibodies.[1] Common reported symptoms include headache, abdominal pain, or swelling/pain of extremities, depending on the location of thrombosis.[1] Cutaneous manifestations in VITT have not yet been explored, but purpuric lesions may be observed in VITT cases with severe thrombocytopenia.[2]

A 29-year-old otherwise healthy male presented with linear purpuric rashes on the right leg for one week, followed by acute onset of painful swelling and weakness on the same leg within recent 2 days. Meanwhile, he also complained headache, nausea, and vomiting. The patient had received ChAdOx1 nCoV-19 vaccination 10 days before presentation. Physical examination showed linear erythematous-to-purplish palpable purpura along the right lower extremity (Fig. 1a,b). Duplex ultrasound examination revealed deep vein thrombosis (DVT), corresponding to the location of linear purpura from the level above right common femoral vein to right anterior/posterior tibial vein (Fig. 1c). Histopathology of linear purpura showed lymphocytic vasculitis and erythrocyte extravasation in the dermis and subcutaneous fat tissue (Fig. 1d,e). Magnetic resonance angiography study was arranged due to the neurologic symptoms and revealed dural sinus thrombosis at superior sagittal sinus (Fig. 1f), resulting in left parietal lobar hematoma, brain edema, and midline shift.

Laboratory testing showed thrombocytopenia (platelet count 42×10^9/L), elevated D-dimer level (>10 000 FEU ng/mL), and positive anti-PF4 IgG antibody ELISA tests [658.3 ng/mL (normal, 42.1–313.4 ng/mL)]. VITT was diagnosed, and the patient was treated with intravenous immunoglobulin (2 g/kg/day) for 2 days, intravenous methylprednisolone (80 mg/day) and apixaban (10 mg/day). Linear purpura diminished gradually after one-month VITT treatment.

Since global mass COVID-19 vaccination is in progress, the surveillance system by the Vaccine Adverse Events Reporting System (VAERS) had reported, despite a low incidence of VITT, several hundred patients developing this catastrophic adverse event.[1,3] Adenovirus-vectored COVID-19 vaccines induce the production of anti-PF4 antibodies which form immune complexes, triggering platelet activation and subsequent thrombotic events in VITT.[1] Venous thrombosis often occurs at multiple sites, such as cerebral venous sinus thrombosis, DVT, pulmonary embolism, splanchnic vein thrombosis, arterial thrombosis, and concomitant or secondary bleeding and/or intracerebral hemorrhage.[1]

Various cutaneous manifestations have been observed following COVID-19 vaccinations, including purpuric/petechial rashes.[2] Vasculitis is not the only etiology for COVID-19

