

## Reactive arthritis and cutaneous vasculitis after SARS-CoV-2 infection

Musculoskeletal symptoms are frequent in coronavirus-induced disease (COVID-19). Myalgia occur in 35% of hospitalized COVID-19 patients [1]. In a meta-analysis of 10 studies with a total of 1995 patients, frequency of myalgia ranged from 11% to 50% [2]. Arthralgia occasionally present as predominant symptoms in COVID-19 [3]. No cases of persisting or recurrent musculoskeletal symptoms post COVID-19 infection have been reported so far. Herein, we describe the onset arthritis and vasculitis in a COVID-19 patient after recovery from acute COVID-19 symptoms.

A 65-year-old Caucasian woman presented with respiratory symptoms, elevated temperatures and shortness of breath. Throughout, she developed generalized myalgia and back pain. She tested positive for SARS-CoV-2 10 days after first showing symptoms.

Ten days after cessation of all COVID-19-related symptoms, she presented symmetric polyarthritis of ankles, wrists and knee joints (Fig. 1A) as well as palpable purpura of both calves (Fig. 1B & C). She tested negative for SARS-CoV-2 RNA at admission. She exhibited no history of rheumatic diseases.

Serologically, elevated CRP levels (34.7 mg/l) were found. All auto-antibody tests were negative. HLA-B27 was positive. She showed neither clinical nor serological signs for an acute or previous other infection.

Anti-SARS-CoV-2 IgG antibodies measured by ELISA (Euroimmun, Germany) showed the highest levels among all COVID-19 patients tested in our hospital. Even after dilution of 1:10 000, the sera of our patient

still exhibited antiviral reactivity, suggesting the presence of a very strong humoral immune response in this case. All clinical symptoms and CRP levels immediately regressed after initiating prednisolone.

While there is no evidence that these phenomena were caused by COVID-19, it appears the most likely scenario after ruling out other likely causes. The timely relation, presence of HLA-B27 as well as the strong anti-SARS-CoV-2 IgG antibody response support the concept that COVID-19 induced an autoimmune response that led to reactive arthritis and vasculitis.

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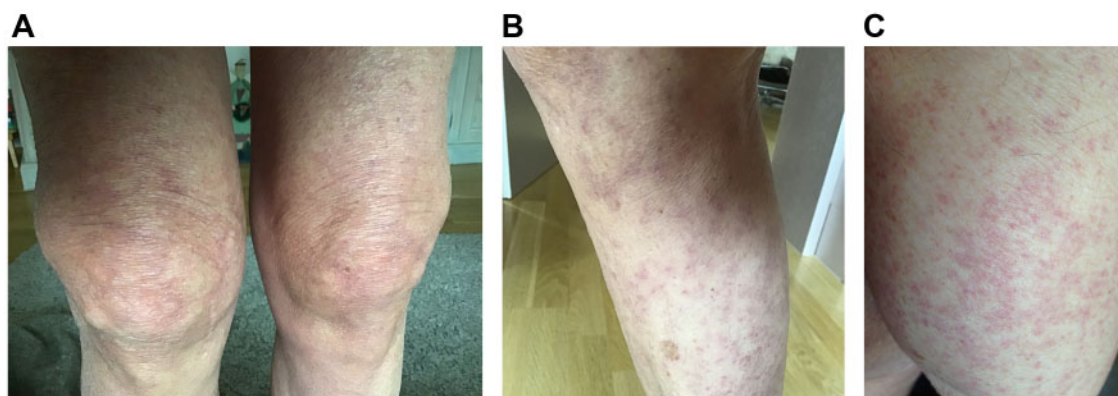
## Data availability statement

Data are available upon reasonable request by any qualified researchers who engage in rigorous, independent scientific research, and will be provided following review and approval of a research proposal and Statistical Analysis Plan (SAP) and execution of a Data Sharing Agreement (DSA). All data relevant to the study are included in the article.

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**Fig. 1** Arthritis of both knees (A) and purpura of the calves (B & C) in patient after SARS-CoV-2 infection



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## References

- 1 Wang D, Hu B, Hu C *et al.* Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *JAMA* 2020;323:1061–9.
- 2 Li LQ, Huang T, Wang YQ *et al.* COVID-19 patients' clinical characteristics, discharge rate, and fatality rate of meta-analysis. *J Med Virol* 2020;92:577–83.
- 3 Joob B, Wiwanitkit V. Arthralgia as an initial presentation of COVID-19: observation. *Rheumatol Int* 2020;40:823.