Transient monoarthritis and psoriatic skin lesions following COVID-19

Emerging reports have described the possible occurrence of arthritis in patients infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).\textsuperscript{1–3} Apart from crystal-induced arthritis,\textsuperscript{1} Yokogawa et al\textsuperscript{2} and Alivernini et al\textsuperscript{1} both described the onset of inflammatory arthritis with the characteristics of viral arthritis over the course of COVID-19. Here we would like to share a different case of monarthritis associated with psoriatic skin lesions presenting after resolution of SARS-CoV-2 infection. In April 2020, a patient in his 30s was admitted to our early arthritis outpatient clinic due to a 2-week history of painful limitation of the right elbow. The patient had no previous history of arthritis, back pain, enthesopathy, dactylitis, psoriasis (PsO) or other extra-articular symptoms of axial spondylarthritis, nor familiarity for rheumatic diseases and/or PsO. Forty days earlier, the patient had been suffering from arthralgia, fatigue, diarrhoea and anosmia, and had been diagnosed with COVID-19 based on reverse transcription (RT-PCR) detection of SARS-CoV-2 following nasopharyngeal swab. Blood test analysis at the time of SARS-CoV-2 infection showed leucocytosis, lymphopaenia and increased levels of C reactive protein. The patient self-isolated and self-medicated with symptomatic drugs. COVID-19 symptoms resolved after 2 weeks, and two consecutive nasopharyngeal swabs at 3-day intervals tested negative for SARS-CoV-2. Ten days after resolution of symptoms, the patient started experiencing pain at the right elbow, together with the appearance of three itchy, clearly demarcated erythematous scaly patches on the extensor surface of both elbows and groin suggestive of PsO (figure 1A). During the following 2 weeks, pain and functional limitation of the right elbow continued to increase. The right elbow was swollen at both clinical and ultrasonographic assessments (figure 1B), and the synovial fluid was negative for SARS-CoV-2 RNA on RT-PCR and free from crystals on polarised microscopic examination. Non-steroidal anti-inflammatory drugs for arthritis and topical steroids for skin lesions were prescribed. Six weeks later, skin and joint symptoms had completely disappeared. Blood test analysis revealed resolution of leucocytosis and lymphopaenia, with mild reduction of natural killer (NK) and CD19+ lymphocytes (104 and 125/μL, respectively), and normal values of CD4+ and CD8+ lymphocytes. Antinuclear antibodies, antiretractable nuclear antigens, rheumatoid factor and anticitrullinated protein autoantibodies all tested negative. Human leucocyte antigen B*27 and C*06 were absent. SARS-CoV-2 S1/S2 IgG title was 82.4 AU/mL, with normal values of <12 AU/mL.

The possible immune mechanisms underlying the occurrence of acute arthritis following SARS-CoV-2 infection deserve further investigation. Compared with the cases of viral arthritis described to date,\textsuperscript{1–3} our patient displayed features of reactive arthritis. In some patients with COVID-19, a state of virus-induced transient immunosuppression\textsuperscript{4} may predispose to the occurrence of certain immune-mediated (auto)inflammatory diseases even in the absence of a genetic background. This state of immunosuppression may indeed induce an uncontrolled inflammatory innate response with high cytokine levels, also characterised by a marked elevation of interleukin (IL)-17,\textsuperscript{4,5} the key cytokine in both PsO and psoriatic arthritis pathogenesis.\textsuperscript{6} In fact, high plasma levels of IL-17 have been described in patients with Middle East respiratory syndrome, and patients with COVID-19 have increased numbers of circulating Th17 cells.\textsuperscript{7} A better understanding of the immune alterations that accompany SARS-CoV-2 infection may represent a useful opportunity to further investigate the immunopathogenic mechanisms capable of promoting or contrasting the development of specific rheumatic diseases. We believe that during and after the pandemic, close monitoring on the prevalence and expressiveness of rheumatic diseases is needed.

Ludovico De Stefano,\textsuperscript{1,2} Silvia Rossi,\textsuperscript{1} Carlomaurizio Montecucco\textsuperscript{1,2} Serena Bugatti\textsuperscript{1,2}

1Division of Rheumatology, IRCCS S Matteo, Pavia, Italy
2Department of Internal Medicine and Therapeutics, University of Pavia, Pavia, Italy

Correspondence to Dr Ludovico De Stefano, Division of Rheumatology, IRCCS S Matteo, Pavia 27100, Italy; ludovico.destefano01@universitadipavia.it

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ORCID iDs
Carlomaurizio Montecucco http://orcid.org/0000-0001-8263-3925
Serena Bugatti http://orcid.org/0000-0002-5396-7077
Correspondence

REFERENCES


