



Elsevier has created a [Monkeypox Information Center](#) in response to the declared public health emergency of international concern, with free information in English on the monkeypox virus. The Monkeypox Information Center is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its monkeypox related research that is available on the Monkeypox Information Center - including this research content - immediately available in publicly funded repositories, with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the Monkeypox Information Center remains active.



Monkeypox associated acute arthritis

Mirella Fonti*, Theresa Mader*, Jan Burmester-Kiang, Stephan W Aberle, Barbara Horvath-Mechtler, Marianna Traugott, Hermann Laferl, Alexander Zoufaly, Christoph Wenisch, Ludwig Erlacher, Wolfgang Hoesler

Lancet Rheumatol 2022; 4: e804

Published Online
September 12, 2022
[https://doi.org/10.1016/S2665-9913\(22\)00257-0](https://doi.org/10.1016/S2665-9913(22)00257-0)

*Contributed equally

Second Medical Department with Rheumatology and Osteology (M Fonti MD, J Burmester-Kiang MD, L Erlacher MD), Fourth Medical Department with Infectious Diseases and Tropical Medicine (T Mader MD, M Traugott MD, H Laferl MD, A Zoufaly MD, C Wenisch MD, W Hoesler MD), and Institute of Radiology (B Horvath-Mechtler MD), Klinik Favoriten, Vienna, Austria; Center for Virology, Medical University of Vienna, Vienna, Austria (S W Aberle MD); Karl Landsteiner Institute for Autoimmune Diseases and Rheumatology, Vienna, Austria (L Erlacher); Faculty of Medicine, Sigmund Freud University, Vienna, Austria (A Zoufaly)

Correspondence to: Dr Mirella Fonti, Second Medical Department with Rheumatology and Osteology, Klinik Favoriten, 1100 Wien, Austria
mirellafonti94@gmail.com

A 31-year-old HIV-positive man presented to the hospital on June 30, 2022, with a vesicular rash (figure A), perianal lesions, swollen inguinal lymph nodes, and arthralgia of the right knee. Under antiretroviral therapy, the HIV viral load was below the limit of detection, and his CD4⁺ T-cell count was 802 cells per μL . Given the rising number of monkeypox cases in Europe at that time and the patient's history of unprotected sexual contact with a man 1 week before symptom onset, an infection with monkeypox virus was suspected. Specimens from two different skin lesions yielded a positive PCR result (cycle threshold values of 20 and 21) for monkeypox virus. The patient was discharged and self-isolated.

11 days later a follow-up examination was scheduled, the rash and lymphadenopathy had completely resolved, but a marked swelling of the right knee was noted (figure B). Arthrocentesis was performed, resulting in aspiration of 60 mL of cloudy synovial fluid. Analysis of the synovial fluid showed a cell count of 16127 cells per μL with 88·5% mononuclear cells (lymphocytes) and 11·5% neutrophil granulocytes. The synovial fluid PCR yielded a positive result for monkeypox virus (cycle threshold value of 27). Laboratory test results were unremarkable apart from a slightly elevated C-reactive protein of 18 mg/L.

Bacterial cultures and broad-range PCR of synovial fluid, serological testing for rheumatoid factor, anti-citrullinated protein antibodies and antinuclear antibodies, human leukocyte antigen B27, and PCR for Lyme disease were all negative. A second arthrocentesis was needed 8 days later due to reoccurrence of effusion. PCR of synovial fluid was again positive for monkeypox virus (cycle threshold value of 33), whereas PCR of whole-blood was negative for monkeypox virus. MRI showed synovitis, joint effusion, and a marked oedema of the medial femoral condyle with a subchondral demarcation zone of 1 cm, compatible with

the diagnosis of arthritis and osteomyelitis (figure C–E). Treatment with non-steroidal-anti-inflammatory drugs led to improvement of arthralgia and swelling within 3 weeks.

Viruses are common triggers of arthritis, but viral bone infection has only rarely been reported. However, viral osteomyelitis was a typical complication of smallpox. Referred to as osteomyelitis variolosa, it affected 2–5% of children and 0·25–0·50% of all patients infected with smallpox. No cases of monkeypox-related arthritis or osteomyelitis have been described in the literature so far. Considering that variola virus and monkeypox virus are closely related, we believe that monkeypox virus might lead to arthritis and potentially osteomyelitis.

Contributors

MF was involved in writing and revision of the manuscript, case managing, contact to patient, knee puncture, data collection, data curation, and editing of the manuscript. TM wrote the first draft of the manuscript and was involved in revision and data interpretation. JB-K was involved in data analysis, review of the manuscript, and clinical management of the patient (outpatient clinic rheumatology). WH participated in writing the first draft of the manuscript, manuscript revision, data analysis, formal analysis and review of the text, and clinical management of the patient (outpatient clinic infectious diseases). BH-M lead the radiological data interpretation. MT participated in reviewing, modifying, and amending the manuscript. AZ took care of clinical management of the patient (outpatient clinic infectious diseases), took skin samples, reviewed the text, and had professional input in case management. SWA was involved in the virological diagnostic, and review, modification, and amendments to the manuscript. HL and CW reviewed the case report and were involved in the modification and amendments to the manuscript. LE gave clinical input in patient management and was involved in the review, modification, and amendments to the manuscript. The patient provided written informed consent for publication of the case and images.

Declaration of interests

We declare no competing interests.

Copyright © 2022 Elsevier Ltd. All rights reserved.

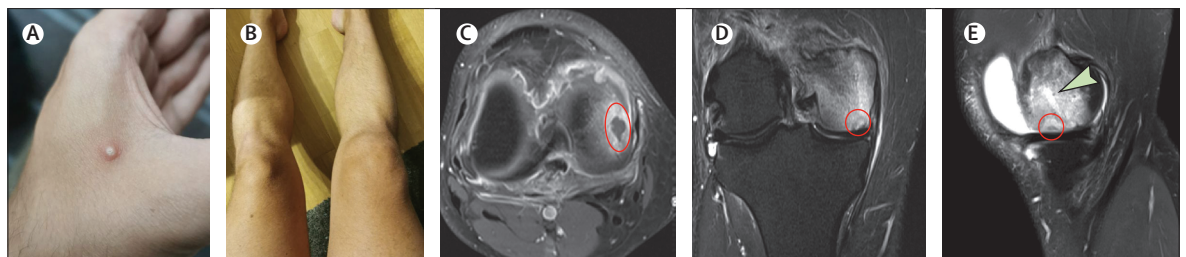


Figure: Skin lesion on the left hand (A), swelling of the right knee (B), MRI* of synovitis with subchondral demarcation zone (red circle; C), MRI† with marked oedema of the medial femoral condyle with subchondral demarcation zone (red circle; D), and MRI‡ of joint effusion, marked oedema (green arrow) and subchondral demarcation zone (red circle; E)

* T1-weighted (longitudinal relaxation time) turbo-spin-echo with fat saturation. † T1-weighted (longitudinal relaxation time) turbo inversion recovery magnitude.

‡ Proton-density weighted fat suppression fast spin echo sequence.