



Arthritis of the left elbow joint after vaccination against SARS-CoV-2 infection

The association between arthritis, severe acute respiratory syndrome-coronavirus 2 (SARS-CoV-2), and coronavirus disease-2019 (COVID-19) vaccination have been investigated and discussed in scientific literature. Several patients with rheumatic diseases, treated in the Medical Center of Joint Diseases (MCJD), developed transient flares after receiving the COVID-19 vaccine. The patient in this case report was a previously healthy man with an unremarkable medical history. He is also an author of this paper. This is the first documented case of arthritis after SPUTNIK-V vaccination without other possible causes of arthritis. The SPUTNIK-V vaccine (Gamaleya Research Institute) is a viral-vectored vaccine,¹ currently in production in Kazakhstan. The vaccination rate in Kazakhstan has increased with that of other countries. It is essential to discuss the various complications arising after vaccination.

1 | CASE PRESENTATION

The patient was B, a 58-year-old patient with no history of uncontrolled or chronic joint disease, infections, or injuries within the previous 3 months. He had no history of inflammatory back pain, morning stiffness, or joint swelling. The patient has had no history of active SARS-CoV-2 infection, and his COVID-19 polymerase chain reaction (PCR) and antibodies in March 2021 were negative. The patient underwent a complete clinical and laboratory examination on 21 April, 2021, before receiving the first dose of the COVID-19 vaccine. Aside from a mildly elevated total blood cholesterol, his examination results were unremarkable. His C-reactive protein (CRP) was normal (2.2 mg/L), and immunoglobulin G (IgG) and IgM antibodies to SARS-CoV-2 were negative. The patient received the first shot of the SPUTNIK-V vaccine on 22 April, 2021, without developing a fever or adverse events. The second shot was completed on 13 May, 2021. Then, mild discomfort in the left elbow joint was noted on 18 May, 2021. This was followed by pain upon movement without fever on 19 May. The following day, the patient reported joint swelling, worsening pain, and stiffness upon movement (Figure 1).

2 | INVESTIGATIONS

Ultrasonography revealed moderate effusion in the left elbow fossa and a small shoulder-elbow joint synovitis. No osteophytes

were identified (Figure 2). Magnetic resonance imaging (Figure 3) confirmed the elbow joint arthritis, but mono-urate deposits were not detected. He had a moderately increased CRP of up to 14 mg/L (below 5 mg/L is normal) and erythrocyte sedimentation rate at 18 mm/h. Rheumatoid factor, anti-cyclic citrullinated peptides, and antistreptolysin O levels were normal. Chlamydia and urea plasma immunoenzyme tests were negative. He had a uric acid level of 341 mmol/L (428 mmol/L and less is normal), and sacroiliitis was not noted on pelvic radiography. The SARS-CoV-2 PCR was negative, while the immunoenzyme SARS-CoV-2 Spike IgG antibody test on 25 May had a borderline result of 1.07 (0.80 negative, ≤ 0.80 -1.10 borderline, ≥ 1.10 positive). The positivity coefficient was 2.67.

3 | OUTCOME AND FOLLOW-UP

During the follow-up on 2 June, the SARS-CoV-2 Spike IgG was 2.68 with a positivity coefficient of 13.4. In addition, a significant increase in the post-vaccination antibodies was noted within 7 observation days. The patient underwent a joint puncture, and 7 mL of light-yellow liquid were obtained. Crystals were not detected on polarization microscopy. After excluding all other possible causes, the patient was diagnosed with "post-vaccination arthritis of the left elbow joint." The patient was treated with non-steroidal



FIGURE 1 Arthritis of the left elbow joint

anti-inflammatory drugs, physiotherapy, and a single intra-articular injection of diprospan (0.5 mL). A repeat ultrasonography 1 week later revealed no arthritis. However, arthralgia on active motion was reported after 1 month.

4 | DISCUSSION

We report a confirmed case of arthritis of the left elbow joint 7 days after the second dose of the SPUTNIK-V SARS-CoV-2 vaccine. Following vaccination, a rapid increase in antibody titers was noted. The patient was a healthy 58-year-old man, and no other causes for the arthritis were identified. In the MCJD in the previous year, several unstable arthritis cases following COVID-19 infection and vaccination were reported. Arthralgia and arthritis have been reported after SARS-CoV-2 infection. Last March, a case of new-onset

rheumatoid arthritis following COVID-19 infection was reported.² A rheumatoid arthritis flare was also reported recently in a patient who received the COVID-19 vaccine.³ The articular complications caused by the different SARS-CoV-2 vaccines were compared,⁴ but the Gam-COVID-Vac vaccine was not included. There have been no English reports describing arthritis after SPUTNIK-V vaccination. This is the first documented case of arthritis in a patient who received the SPUTNIK-V vaccine without other possible causes for arthritis. However, similar to other post-vaccine case reports, the causation was not formally established. In this case, all other possible reasons for the arthritis were evaluated. The number of patients experiencing joint manifestations after vaccination has increased with the vaccination rate. This report documented the first case of arthritis after vaccination in an otherwise intact joint.

The SPUTNIK-V vaccine is produced in Kazakhstan. While persons who received other vaccine types were not observed, joint manifestations can occur with any vaccine. Prospective studies and larger case series of patients undergoing vaccination are needed.

The patient provided informed consent, and is an author of this paper.

5 | LEARNING POINTS/TAKE HOME MESSAGES

1. Arthritis may be a complication of vaccination against SARS-CoV-2 infection.
2. The causation between vaccination and arthritis is difficult to establish.
3. In cases of arthritis after vaccination for the SARS-CoV-2 infection, all the possible causes for arthritis must be thoroughly investigated.

PATIENT'S PERSPECTIVE

The patient is an author of this paper. Further, he believes that this case may help educate doctors during the coronavirus disease-2019 pandemic.

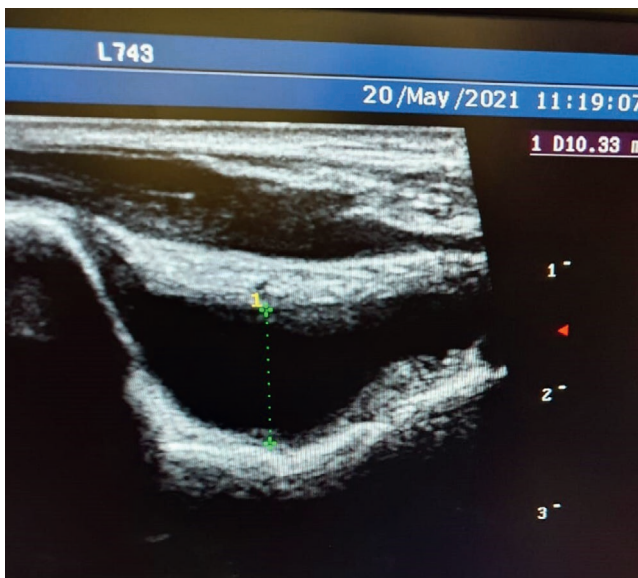



FIGURE 2 Ultrasonography of the left elbow joint revealing moderate effusion in the left elbow fossa



FIGURE 3 Magnetic resonance imaging showing elbow joint arthritis

**KEYWORDS**

arthritis, SARS-CoV-2 infection, SPUTNIK-V, vaccination against SARS-CoV-2 infection


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