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Acute gout arthritis after COVID-19: Secondary to infection or secondary to treatment?

COVID-19 sonrası gelişen akut gut artriti: Enfeksiyona mı sekonder, tedaviye mi sekonder?

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Dear Editor,

Gout is an inflammatory arthritis caused by the deposition of monosodium urate crystals in the setting of hyperuricemia.[1,2] Hyperuricemia generally results from either increased urate production or decreased renal excretion and may occur due to primary or secondary factors Among secondary causes, acute illness and medications are particularly relevant, as both infection-related metabolic stress and certain drugs can precipitate rapid increases in serum urate levels and trigger gout flares.[3] Favipiravir, an antiviral agent used during the coronavirus disease 2019 (COVID-19) pandemic, is known to induce hyperuricemia through inhibition of renal urate excretion.[4]

In this letter, we describe the clinical presentation of acute gouty arthritis that developed during a COVID-19 infection in a patient with pre-existing hyperuricemia.

A 39-year-old male patient presented with severe pain, tenderness, swelling, and redness in both big toes. His history revealed that exactly 10 days prior to the onset of joint symptoms, he had presented to a pandemic outpatient clinic with fever, cough, and fatigue and had been diagnosed with COVID-19 infection by a polymerase chain reaction (PCR) test. Since he did not have significant respiratory distress, he was not hospitalized and was treated as an outpatient. According to the Turkish Ministry of Health's Adult COVID-19 Treatment Guideline,[5] he received favipiravir 200 mg (loading dose of 2x1600 mg on the first day, followed by 2x3 tablets for a total of 5 days).[4] His COVID-19 symptoms resolved. The patient, who had no history of similar joint complaints, had no other joint symptoms. He reported no back pain, morning stiffness, oral/genital ulcers, skin disease, genital discharge, or gastrointestinal symptoms. His past medical history was unremarkable, with no chronic disease or regular medication use. He had no history of kidney stones. Previous laboratory tests showed hyperuricemia. On physical examination, both first metatarsophalangeal joints showed redness, swelling, warmth, and severe tenderness, more prominent on the right (Figure 1). Examination of the other joints was normal. Laboratory evaluation revealed serum uric acid of 8.9 mg/dL (3.4-7.2), an erythrocyte sedimentation rate of 42 mm/h (0-15), and C-reactive protein of 7.2 mg/dL (0.1-4). Other routine laboratory tests, including complete blood

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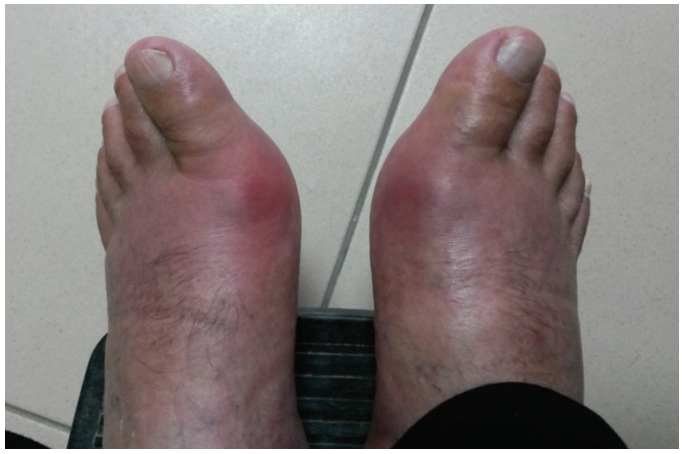

Figure 1. Clinical photograph showing bilateral foot involvement during an acute gout attack, characterized by soft-tissue swelling, erythema, and tenderness consistent with active inflammation

count, renal and liver function tests, electrolytes, coagulation tests, and lipid profile, were normal. X-ray showed soft tissue swelling, and ultrasonography revealed a hyperechoic irregular band on the dorsal surface of the first metatarsophalangeal joints consistent with the "double contour sign". The patient was diagnosed with gout arthritis according to the 2015 American College of Rheumatology (ACR)/European League Against Rheumatism Classification Criteria for Gout.[6] Considering the international pandemic context, national rheumatology society recommendations were taken into account for treatment.[7] The treatment plan was developed based on the recommendations of the 2020 ACR gout management guideline.[8] Based on these findings, treatment with colchicine and prednisolone was initiated. The next day, his symptoms had improved. Continuation of colchicine, tapering and discontinuation of prednisolone, and a follow-up in one month were recommended. At follow-up, uric acid remained elevated (8.8 mg/dL), but no other abnormalities were detected. Allopurinol was added in combination with colchicine prophylaxis to prevent further attacks.

A review of the literature revealed a retrospective study of hospitalized COVID-19 patients that included 8,697 individuals, of whom 146 had gout; 26 of these (18%) developed gout flares. Patients who experienced flares had higher baseline urate levels, were less likely to receive urate-lowering or prophylactic therapy, and had hospital stays that were three days longer. The authors concluded that inadequate use of urate-lowering therapy was the main risk factor.[9] However, acute illnesses including infections are known risk factors for gout and pseudogout flares, and gout flares in hospitalized patients may complicate hospitalizations for conditions such as heart failure, pneumonia, and acute kidney injury.[10] In a case series by López-González et al.,[11] among 306 patients hospitalized for COVID-19, 4 developed acute arthritis, 3 of whom had pre-existing gout. None were receiving colchicine prophylaxis, and urate-lowering therapy (allopurinol) was used at varying doses. None had received favipiravir. In a large Korean retrospective study using the National Health Insurance database (~50 million individuals), the frequency of gout flares increased during the COVID-19 pandemic compared with the pre-pandemic period. Both men and women showed increases, but the difference was statistically significant only among men, who were approximately twice as numerous as women. Age-stratified analysis showed a significant increase only in the 20-59 age group.[12]

Kihara et al.[13] conducted a multicenter observational study in Japan of 222 rheumatology patients with COVID-19. The most frequent diseases were rheumatoid arthritis (48.2%), gout (14.4%), and systemic lupus erythematosus (8.1%). The authors noted that gout prevalence was significantly higher in Japan compared with global data from the COVID-19 Global Rheumatology Alliance,[14] which reported only 2.6%. They suggested that this discrepancy may be related to the widespread use of favipiravir in Japan, which is known to cause hyperuricemia, prompting physicians to inquire more actively about gout history. Favipiravir is also widely used in Türkiye during the pandemic and hyperuricemia is a well-known side effect.[4] Our presented patient received favipiravir at the guideline-recommended dose.[5]

Kihara et al.[13] reported no statistically significant difference in COVID-19 outcomes in patients with gout compared to other rheumatologic diseases. In multivariate analysis, "disease category" (including gout in the "other diseases" group) was not significantly associated with severe COVID-19.

When interpreting this case, the central question raised by the title—whether the acute gout flare was secondary to infection or to treatment—requires a structured evaluation of potential triggers. Acute systemic illnesses, including infections, are well-recognized precipitants of gout flares, and COVID-19 infection itself may induce a pro-inflammatory state and metabolic stress that promote monosodium urate crystal-driven inflammation. Previous studies have demonstrated that gout flares occur in a substantial proportion of patients hospitalized with COVID-19, particularly among those with elevated baseline serum urate levels and insufficient prophylactic therapy, supporting the possibility that COVID-19 infection may act as a biological trigger in susceptible individuals.[9] In addition to infection-related mechanisms, antiviral therapy may also contribute to gout flares. Favipiravir is known to increase serum urate levels through its effects on renal urate transport, and prior case reports have described acute gouty arthritis developing during favipiravir treatment for COVID-19. Notably, Hase et al.[15] reported a patient who developed acute gouty arthritis following favipiravir-associated elevation in serum urate, suggesting that favipiravir may trigger not only biochemical hyperuricemia but also clinically overt gout flares. Beyond isolated triggers, patient susceptibility plays a critical role. Studies evaluating

gout flare during COVID-19 hospitalization have identified elevated baseline serum urate levels, absence of urate-lowering therapy, and lack of flare prophylaxis as major risk factors.[16] In this context, the present patient's pre-existing hyperuricemia likely created a vulnerable biological background. Rather than representing mutually exclusive mechanisms, infection-related inflammation and drug-induced hyperuricemia may have acted synergistically, and this "multiple-hit" model may provide a more comprehensive explanation than attributing the flare solely to either infection or treatment. Taken together, this case highlights that COVID-19 infection and favipiravir exposure may jointly increase the likelihood of acute gouty arthritis in patients with underlying hyperuricemia, underscoring the importance of careful monitoring of serum urate levels and musculoskeletal symptoms in patients receiving favipiravir, particularly those with known hyperuricemia or previous gout risk factors.

Although the pandemic has subsided, seasonal increases in COVID-19 cases are expected. Therefore, patients with gout or asymptomatic hyperuricemia should be monitored closely for gout arthritis during COVID-19 infection.

Ethics

Authorship Contributions

Surgical and Medical Practices: F.A.K., İ.D., Concept: F.A.K., İ.D., Design: F.A.K., İ.D., G.Ü., Data Collection and Processing: F.A.K., İ.D., Analysis and Interpretation: G.Ü., Literature Search: G.Ü., Writing: F.A.K., G.Ü.

Footnotes

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References

1. Dalbeth N, Merriman TR, Stamp LK. Gout. Lancet 2016;388:2039-52.
2. Kozanoğlu E. Gut hastalığı. In: Bodur H, Ataman Ş, editors. Romatoloji e-Kitap. İstanbul: Türkiye Romatoloji Derneği; 2019. p. 2-26. Available from: https://www.trasdromatolojiekitap.org/icindekiler.php?id=114
3. McLean L, Dalbeth N. Etiology and pathogenesis of gout. In: Hochberg MC, Silman AJ, Smolen JS et al., editors. Rheumatology. 6th ed. Philadelphia: Mosby Elsevier; 2015. P. 1555-68.
4. Ministry of Health of the Republic of Türkiye. Favipiravir 200 mg Tablet – Information for Drugs Used in the Treatment of COVID-19 (SARS-CoV-2 Infection). Ankara: Ministry of Health; 2021. Available from: khgmstokyonetimidb.saglik.gov.tr (Accessed Feb 2026).
5. Ministry of Health of the Republic of Türkiye, General Directorate of Public Health. COVID-19 (SARS-CoV-2 Infection) Adult Patient Treatment Guideline. Ankara: Ministry of Health; 2020. Available from: https://www.ekmud.org.tr/files/uploads/files/Saglik-Bakanligi-COVID-19-rehberi-23032020.pdf (Accessed Feb 2026).
6. Neogi T, Jansen TL, Dalbeth N, et al. 2015 Gout classification criteria: an American College of Rheumatology/European League Against Rheumatism collaborative initiative. Ann Rheum Dis 2015;74:1789-98.
7. Babaoğlu H. Türkiye Romatoloji Derneği Romatoloji Uzmanları için Koronavirüs (Covid-19) salgını sırasında hastalık yönetimi önerileri. J Turk Soc Rheumatol 2020;12:1-2.
8. FitzGerald JD, Dalbeth N, Mikuls T, et al. 2020 American College of Rheumatology Guideline for the Management of Gout. Arthritis Care Res (Hoboken). 2020;72:744-60.
9. Jatuworapruk K, Satpanich P, Robinson PC, Grainger R. Prevalence, risk factors, and outcomes of gout flare in patients hospitalized for PCR-confirmed COVID-19: a multicenter retrospective cohort study. J Rheumatol. 2023;50:556-63.
10. Robinson PC, Kempe S, Tebbutt I, et al. Epidemiology of inpatient gout in Australia and New Zealand: temporal trends, comorbidities and gout flare site. Int J Rheum Dis. 2017;20:779-84.
11. López-González MD, Peral-Garrido ML, Calabuig I, et al. Case series of acute arthritis during COVID-19 admission. Ann Rheum Dis. 2021;80:e58.
12. Kim JH, Kwon MJ, Choi HG, et al. Changes in the mean incidence and variance of orthopedic diseases before and during the COVID-19 pandemic in Korea: a retrospective study. BMC Musculoskelet Disord. 2023;24:540.
13. Kihara M, Sugihara T, Asano J, et al. Clinical characteristics of COVID-19 patients with underlying rheumatic diseases in Japan: data from a multicenter observational study using the COVID-19 Global Rheumatology Alliance physician-reported registry. Clin Rheumatol. 2022;41:3661-73.
14. COVID-19 Global Rheumatology Alliance. The COVID-19 Global Rheumatology Alliance (GRA). Available from: https://rheum-covid.org/ (Accessed Feb 2026).
15. Hase R, Kurata R, Ishida K, et al. Acute gouty arthritis during favipiravir treatment for coronavirus disease 2019. Intern Med. 2020;59:2327-9.
16. Mongkolporn A, Satpanich P, Grainger R, Jatuworapruk K. GOUT-36 prediction rule is sensitive in predicting gout flare during COVID-19 hospitalization. Int J Rheum Dis. 2024;27:e15010.