Patient re-presents to the clinic with reactive arthritis in the right hip after covid-19 infection: A case report

Kamyar Shokraee (✉ Kamyarshokraee@gmail.com)

Tehran University of Medical Sciences <https://orcid.org/0000-0003-2828-2989>

Soroush Moradi

Tehran University of Medical Sciences

Tahereh Eftekhari

Qom University of Medical Sciences and Health Services

Rasoul Shajari

Qom University of Medical Sciences and Health Services

Maryam Masoumi

Qom University of Medical Sciences and Health Services

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Abstract

Background: SARS-COV-2, first reported in December 2019, usually presents with respiratory symptoms but can have various other manifestations and sequelae. One of the rare complications of COVID-19 infection is Reactive Arthritis. This complication is more likely to occur following sexually transmitted or gastrointestinal infection.

Case presentation: Herein, we report a 58 years old woman hospitalized following COVID-19 infection and was discharged after a week. She consequently presented to the clinic ten days after her discharge, complaining of walking difficulties and radiating pain in her right hip. After ultrasound and MRI, she was diagnosed with reactive arthritis inflammation in the hip's neck. Other known microorganisms responsible for reactive arthritis were ruled out before attributing it to the earlier COVID-19 infection. She reached remission after being treated using a combination of indomethacin and depot methyl-prednisolone for 14 days.

Conclusion: To our knowledge, this is the first case of reactive arthritis caused by SARS-COV-2 in the hip. Further attention should be paid to symptoms occurring after an episode of infection with COVID-19 in order to expand our understanding of the disease and the symptoms with which it can manifest.

Background

Autoimmune reactions to viral and bacterial infections are a known phenomenon, which occurs 2–4 weeks after infection and affects joints in the lower extremities.[1, 2] SARS-COV-2 infection, first reported in December 2020, was previously thought to display respiratory symptoms as part of the *coronaviridae* family;[3, 4] The rapid spread of this virus, however, revealed various sequelae and symptoms, with the autoimmune system as the primary perpetrator of most of these reactions.[5, 6] Herein we report a case of Reactive Arthritis (ReA) after COVID-19 infection. This case report was prepared following the CARE Guidelines[7].

Case Presentation

A 58 years old Iranian woman with a previous history of hypertension, coronary heart disease, and type 2 diabetes was admitted to the emergency room complaining of unproductive coughs, shortness of breath, and extreme fatigue. RT-PCR test using nasopharyngeal swab yielded positive results for the SARS-COV-2 virus; additionally, CT images showed ground-glass opacity typical of viral pneumonia. Upon hospitalization with an SPO₂ of 88%, a complete blood workup was performed. She was started on interferon β1, dexamethasone, ceftriaxone, enoxaparin, and nortriptyline and was discharged after five days with oxygen levels of 92%. A summary of her laboratory results and her vital information is available in Table 1.

Table 1
Laboratory parameters of the patient during hospitalization due to
COVID-19 infection.

Laboratory Parameter	Day 0	Day 1	Day 3	Day 5
Mg (mmol/L)	2.7			
K (mmol/L)	4.4	4.3	3.7	4.2
Na (mmol/L)	136	136	134	134
RBC (10 ⁶ /μL)	4.55	4.23	4.24	4.65
Plt (count/μL)	173000	262000	284000	355000
WBC (count/μL)	4200	7900	6700	10300
Hb (g/dL)	13.6	12.2	12.2	13
Hematocrit (%)	37.6	37	36.6	38.1
MCV (fL)	82.6	87.5	86.3	81.9
MCH (pg)	29.9	28.8	28.8	28
MCHC (g/dL)	36.2	33	33.3	34.1
INR	1.08			
PTT (sec)	44			
CRP (μg/mL)	30	44.2	26.2	4.5
SGOT(AST) (U/L)	36			
SGPT(ALT) (U/L)	38			
FBS (mg/dL)	357		224	
ESR (mm/h)	83			
SCr (mg/dL)	0.9	0.8	0.8	0.7
Urea (mg/dL)	41	44	35	40
ALP (U'L)	351			
LDH (U/L)	778	778	670	623
PT (sec)	13			
Neutrophil (%)		80	82	
Lymphocyte (%)		17	15	

Ten days after her discharge, she represented to the clinic complaining of radiating pain in her right hip, which had caused her walking difficulties. Physical examination revealed movement difficulties as well as pain in her right sacroiliac. Color doppler sonography of right lower extremities found no signs of either stenosis in the arteries and thromboses in deep and superficial veins. However, ultrasound images of the soft tissues around the hip revealed an increase in the thickness of synovium and articular effusion in the hip's neck with a 7 mm diameter (Fig. 1). Additionally, MRI revealed a fluid rim around the pelvic area, suggesting inflammation in the right hip (Fig. 2). High CRP (6.5 mg/L) and ESR (45 mmol/h) suggested the presence of reactive arthritis in the right hip. Since reactive arthritis typically happens due to an infection, the patient was tested for Brucellosis (Using Wright, Combs Wright, and 2ME tests) and Tuberculosis (Using PPD skin test) as two of the primary organisms causing ReA. Enteric infections were also ruled out since no gastrointestinal symptoms were present. IgM and IgG tests of COVID-19 confirmed that the patient had antibodies from her infection with the SARS-COV-2 virus. A diagnosis of ReA after COVID-19 was established based on the lab results and the images.

The patient was started on 100 mg indomethacin twice a day and 80 mg IM depot prednisolone based on this diagnosis. She showed dramatic improvement starting five days after her visit and reached remission after 14 days.

Discussion And Conclusions

Reactive arthritis is a form of spondyloarthritis that typically manifests with the involvement of one or a few joints asymmetrically following an infection episode, classically with genitourinary or gastrointestinal microorganisms[8, 9]. These microorganisms, however, are not the only ones to which ReA can be attributed. Previous studies have reported ReA following HIV infection as well as with dengue and chikungunya viruses[10–12]. In theory, reactive arthritis can be caused by SARS-COV-2, since by now, it has been shown to cause multi-organ involvement, presenting with respiratory and neurologic, and gastrointestinal symptoms.

Only a few cases of arthritis caused by COVID-19 have been reported until now. Lopez-Gonzales reported 4 cases of acute arthritis during COVID-19 admission, all of which had rheumatologic background diseases[13]. Two other reactive arthritis cases following infection with SARS-COV-2 were reported, one of a 57 years old man in Japan and the other of a 73 years old man in Turkey[14, 15]. In both cases and our case, arthritis symptoms appeared 2–3 weeks after being diagnosed with COVID-19. However, none of these two patients had any symptoms in their hip since their ReA had mainly affected smaller joints, particularly in the hands. To our knowledge, this is the first case of ReA symptoms in the hip after COVID-19.

Despite our effort to exclude the primary infections responsible for ReA, our ability to perform tests on the patients was heavily limited due to the high amount of resources allocated to COVID-19 patients during the current pandemic. Accordingly, we could not entirely rule out genitourinary infections or obtain a

sample of the patient's synovial fluid. Further investigation is required to establish the probability of ReA after infection with the SARS-COV-2 and to find the most appropriate treatment for this condition.

List Of Abbreviations

ReA: Reactive arthritis

RT-PCR: Reverse transcription polymerase chain reaction

CT: Computed tomography

MRI: Magnetic resonance imaging

PPD skin test: Purified protein derivative skin test

HIV: Human immunodeficiency virus

2ME test: 2-Mercaptoethanol test

SpO₂: Peripheral capillary oxygen saturation

RBC: Red blood cell

WBC: White blood cell

Hb: Hemoglobin

MCH: Mean corpuscular hemoglobin

MCV: Mean corpuscular volume

MCHC: Mean corpuscular hemoglobin concentration

INR: International normalized ratio

PTT: Partial thromboplastin time

PT: Prothrombin time

CRP: C-reactive protein

ESR: Erythrocyte sedimentation rate

SCOT (AST): Serum glutamic-oxaloacetic transaminase (Aspartate aminotransferase)

SGPT (ALT): Serum glutamic-pyruvic transaminase (Alanine transaminase)

ALP: Alkaline phosphatase

LDH: Lactate dehydrogenase

FBS: Fasting blood sugar

SCr: Serum creatinine

Declarations

Ethics approval and consent to participate:

This study was approved and supervised by the Research and Ethics Committee of Qom University of Medical Sciences and Health Services.

Consent for publication:

Informed consent was obtained from the patient for publication of this case report and any accompanying images.

Availability of data and materials:

All data of this study are included in this published article.

Competing interests:

All of the authors have no conflict of interest to declare.

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Authors' contributions:

Maryam Masoumi conceived and planned the visit. Maryam Masoumi, Tahereh Eftekhari and Rasoul Shajari carried out the physical examinations. Maryam Masoumi, Kamyar Shokraee and Soroush Moradi planned and carried out the laboratory tests. Kamyar Shokraee, Maryam Masoumi, Soroush Moradi, Tahereh Eftekhari and Rasoul Shajari took the lead in writing the manuscript. All authors provided critical feedback and helped shape the research.

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Figures

Figure 1

Ultrasonic images of soft tissue around the hip. An increase in thickness is seen in the synovium and also articular effusion in the hip's neck with a 7 mm diameter.

Figure 2

MRI of the pelvis. MRI revealed a fluid rim around the pelvic area, suggesting inflammation in the right hip.