

Coronavirus Disease 19 (COVID-19) complicated with post-viral arthritis

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ABSTRACT

Coronavirus disease 2019 (COVID-19) was reported in Europe in the beginning of February 2020. The human infection of this virus can present with typical symptoms that include fever, cough and dyspnea, and not much was known about the clinical evolution of the disease. Herein, we report a case of a late complication of COVID-19 infection in a 41-year-old female. The patient presented with a 7-day history of myalgia, low fever, rhinorrhea and loss of smell. COVID-19 was confirmed by real-time polymerase chain reaction (PCR) in nasal and oropharyngeal swabs. However, at 4 weeks after the beginning of the symptoms, the patient developed severe arthralgia of some interphalangeal joints of the hands, lasting for 4 weeks. Laboratory workup revealed no significant changes, and the symptoms resolved with a short course of oral steroids. Post-viral arthritis might be a late complication of COVID-19.

Keywords: Post-viral; Covid-19; Arthritis.

INTRODUCTION

Since December 2019, coronavirus disease 2019 (COVID-19) has spread to many countries worldwide, and has been declared a pandemic disease¹. The clinical manifestations of acute COVID-19 are heterogeneous, but fever, cough and dyspnea are the more commonly described². Severity of clinical presentation also varies between asymptomatic, mild to severely ill, requiring assisted ventilation in intensive care units in up to 12% of patients³. Although much is known about acute manifestations of the disease, less has been re-

ported about the evolution of the disease and the occurrence of post-infectious complications. We report a case of COVID-19 infection in a patient that was complicated by post-viral reactive arthritis.

CASE REPORT

A 41-year-old previously healthy female physician had a 7-day history of myalgias, fatigue, coryza and loss of smell and taste. The patient had low fever (38°C) on the first day of symptoms, but was afebrile thereafter. All other members of her family (2 children aged 13 and 9, and husband) had a similar clinical syndrome. A nasal and oropharyngeal swab and polymerase chain reaction (PCR) confirmed the diagnosis of COVID-19, as well as on the other family members. The patient had an uneventful clinical recovery, with conservative treatment 10 days after presentation. Nasal and oropharyngeal swab and real-time PCR turned negative after 5 weeks of the beginning of the viral symptoms. At 4 weeks after the beginning of the symptoms, while still positive for coronavirus, the patient started complaining of pain, swelling and limited range of movement of the proximal interphalangeal joint of the third finger of the right hand (Figure 1). On the following days, symptoms progressed and involved other joints of the hands, bilaterally: third and fourth proximal interphalangeal joints of the right hand and distal interphalangeal joints, and the first metacarpophalangeal joints. The patient complained of prolonged morning stiffness (more than one hour), and pain woke her up during sleep. Symptoms responded slightly to non-steroidal anti-inflammatory agents (ibuprofen 1200 mg/day). Laboratory workup for rheumatic systemic diseases was negative (ANA, Anti-ds DNA, rheumatoid factor, ACPA, ENAs, antibodies to echoviruses, parvovirus B19, HIV 1 and 2, hepatitis B and C, and serum uric acid, C-reactive protein and erythrocyte sedimentation rate were in the normal ranges. PCR for coronavirus was negative

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FIGURE 1. Right hand at 5 weeks after infection with Coronavirus 19, showing proximal interphalangeal joint swelling of the 3rd finger.

after 5 weeks of the diagnosis. At 6 weeks after the beginning of the first viral symptoms, IgG for coronavirus 19 was positive, (Ig G 2.33 U/ml; $N < 1.0$) and IgM was negative (0.4 U/ml). A post-viral etiology for the articular symptoms was presumed, and a short course of 5 days of oral prednisolone (5 mg/day) was started. At day 5 after starting steroids (7 weeks after the beginning of the symptoms) the patient's complaints improved significantly, with only mild pain of the interphalangeal joints of the hands, that resolved completely without medication at the 8th week. The patient had a 3-month follow-up period, with no joint complaints or new inflammatory signs.

DISCUSSION

COVID-19 caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was first reported in Wuhan, China, in December 2019. Since then, it has rapidly affected other countries worldwide. COVID-19 affects mostly adult and elderly patients. Many health professionals were infected with the virus due to exposure to infected patients and colleagues.

Younger adults mostly have mild clinical manifestations, recover with conservative treatment and have a low mortality⁴. Although at present there is available information on the clinical course of the acute disease, the medium and long-term complications of this viral disease are only now starting to be reported.

Viral-associated musculoskeletal complaints may include arthralgia, arthritis and/or tenosynovitis, and can occur at any time in the course of infection. However, if prolonged, the articular complaints can mimic other rheumatic diseases. One example is parvovirus B19, that can affect small joints of the fingers symmetrically, and can mimic rheumatoid arthritis or systemic lupus erythematosus. Usually, patients with viral arthritis present with a self-limited episode of symmetric polyarticular arthritis or arthralgia. In some cases, autoantibodies such as rheumatoid factor, antinuclear antibodies (ANA) and others may be transiently positive. Mechanisms involved in viral arthritis are poorly understood, but may include direct infection of the joint, immune complex formation and immune modulation. Most patients with viral arthritis fully recover, and only rarely evolve to chronicity. However, it has been suggested that the incidence of rheumatoid arthritis might increase after epidemics of other coronaviruses⁵, and possibly also with COVID-19.

Articular complaints developed in our patient 4 weeks after symptom onset, while the patient was still positive for the virus RNA, but already asymptomatic. Since only one evaluation of serum antibodies against SARS-CoV-2 was performed at 6 weeks of disease, we have no data on the timing of seroconversion. According to the literature, patients with COVID-19 are usually positive for IgG at 19 days⁶, although IgG can be detected earlier.

Although millions of patients have been infected with coronavirus SARS-CoV-2, to our knowledge, there is only one other report of post-viral arthritis associated with COVID-19 affecting large joints (knee, shoulder)⁷, and there are two reported cases of reactive arthritis after COVID-19 infection^{8,9}.

The effect of steroid use in COVID-19 is still unknown. Some reports suggested that steroid treatment was related with higher mortality of patients with viral infections such as influenza¹⁰, and with a slower RNA clearance of other coronavirus, such as in Middle East respiratory syndrome (MERS)¹¹ and Severe Acute Respiratory Syndrome (SARS)¹². However, in this patient, only a low dose (5 mg of prednisolone) of a short course of steroids (5 days) was administered, after ne-

gative conversion of the PCR of the virus RNA.

In conclusion, we report a case of post-viral arthritis after COVID-19, starting after 4 weeks of disease in a previously healthy patient. With increasing numbers of patients recovering from COVID-19, increasing data on post infectious complications and management will arise.

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