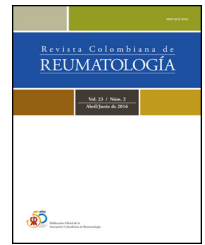




Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database 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 COVID-19 resource centre remains active.



Case Report

Monoarthritis induced by the Oxford-AstraZeneca^R SARS-CoV-2 vaccine



Bruna Ossanai Schoenardie^{a,*}, Arthur Ossanai Schoenardie^b, Jéssica Pauli Damke^a

^a Department of Dermatology, Hospital de Clínicas de Porto Alegre, Porto Alegre, Brazil

^b School of Medicine, Universidade Federal de Santa Maria, Santa Maria, Brazil

ARTICLE INFO

Article history:

Received 18 July 2021

Accepted 17 January 2022

Available online 3 February 2022

Keywords:

Monoarthritis

COVID-19

Vaccine

ABSTRACT

We describe the case of a 25-year-old woman who presented with monoarthritis of the proximal interphalangeal articulation of the fourth left finger 4 days after receiving the second dose of the Oxford-AstraZeneca^R SARS-CoV-2 vaccine. She had no abnormalities in her X-ray or blood exams, but she had a cousin diagnosed with juvenile rheumatoid arthritis. The patient had an excellent response to anti-inflammatory medication, the arthritis was transient and left no sequelae. Studies have shown some vaccines may be associated with acute arthritis, in particular the measles-mumps-rubella vaccine. Young women such as our patient seem to be more susceptible to post-vaccination arthritis. Most of the cases reported were transient and left no articular sequelae, thus we did not contraindicate further doses of the Oxford-AstraZeneca^R SARS-CoV-2 vaccine (should they be recommended in the future) in this case.

© 2022 Asociación Colombiana de Reumatología. Published by Elsevier España, S.L.U. All rights reserved.

Monoarthritis inducida por la vacuna Oxford-AstraZeneca^R contra SARS-CoV-2

RESUMEN

Describimos el caso de una mujer de 25 años que presentó monoartritis de la articulación interfalángica proximal del cuarto quirodáctil izquierdo 4 días después de recibir la segunda dosis de la vacuna Oxford-AstraZeneca^R SARS-CoV-2. No presentaba anomalías en sus radiografías ni en los exámenes de sangre, pero tenía una prima diagnosticada con artritis reumatoide juvenil. La paciente tuvo una excelente respuesta a la medicación antiinflamatoria, la artritis fue transitoria y no dejó secuelas. Los estudios han demostrado que algunas vacunas pueden estar asociadas con la artritis aguda, en particular las vacunas contra el sarampión, las paperas y la rubéola. Las mujeres jóvenes como nuestra paciente parecen

Palabras clave:

Monoartritis

COVID-19

Vacuna

* Corresponding author.

E-mail address: bschoenardie@hcpa.edu.br (B.O. Schoenardie).

<https://doi.org/10.1016/j.rcreu.2022.01.002>

0121-8123/© 2022 Asociación Colombiana de Reumatología. Published by Elsevier España, S.L.U. All rights reserved.

ser más susceptibles a la artritis posvacunación. La mayoría de los casos notificados fueron transitorios y no dejaron secuelas articulares, por lo que no contraindicamos nuevas dosis de la vacuna Oxford-AstraZeneca^R SARS-CoV-2 (en caso de recomendarse en el futuro) en este caso.

© 2022 Asociación Colombiana de Reumatología. Publicado por Elsevier España, S.L.U.

Todos los derechos reservados.



Fig. 1 – Clinical findings of acute monoarthritis. Edema and erythema of the proximal interphalangeal articulation of the fourth left finger.

The quick spread of the COVID-19 pandemic has launched a race to develop efficient vaccines to contain the virus. Countries are in an extreme hurry to immunize their populations. As more and more people worldwide are vaccinated against SARS-CoV-2, different adverse effects are being reported. Here, we describe a case of monoarthritis following the second dose of the Oxford-AstraZeneca^R SARS-CoV-2 vaccine.

We report the case of a 25-year-old female healthcare worker who presented with edema, erythema and pain in the proximal interphalangeal articulation of the fourth left finger (Fig. 1). She also had difficulty in flexing the same finger due to soreness and swelling. Upon examination, no other articulations showed any clinical signs of arthritis. Raynaud's phenomenon was absent. A clinical diagnosis of acute monoarthritis was made.

The patient denied having had fever or any recent infections (including COVID-19). She had a family history of juvenile rheumatoid arthritis (one cousin), but had no personal history of arthritis. She was taking pantoprazole for gastroesophageal reflux disease and oral contraceptive pills. Four days before developing the symptoms, the patient had taken her second dose of the Oxford-AstraZeneca^R SARS-CoV-2 vaccine. She reported only local pain in the injection site after the first dose.

The X-ray showed no abnormalities. Total blood count, C-reactive protein, erythrocyte sedimentation rate, creatinine, urea, aspartate transaminase, alanine transaminase, serum protein electrophoresis, total serum proteins, thyroid-stimulating hormone, parathyroid hormone and serum calcium dosage were all within normal range. Antinuclear antibodies, rheumatoid factor, HLA-B27, antibodies for HIV 1 and 2, hepatitis B and C and syphilis were negative.

Faced with a compatible timeline since vaccination and normal laboratory exams, a diagnosis of reactive arthritis secondary to the SARS-CoV-2 vaccine was made. We prescribed 7 days of ibuprofen and 3 days of 20 mg prednisone. She showed a good response to treatment and after four days all symptoms were resolved with no articular sequelae.

More than 90% of the patients who receive the Oxford-AstraZeneca^R vaccine report some form of adverse effect. The main adverse effects described are local pain, followed by muscle pain, headaches, chills and fever.¹ One study performed in South Korea showed that women were more likely to have adverse effects to the vaccine than men and that adverse effects were more prevalent among younger patients, such as our patient.¹

There have been reports of arthralgia following vaccination for rubella, hepatitis B, measles-mumps-rubella (MMR), seasonal influenza and tuberculosis (BCG).^{2,3} A 2019 Systematic Review showed there might be an association between vaccination and acute arthritis, however most papers included in the review studied the seasonal influenza vaccine and the outcome was difficult to analyze due to differences in the outcomes that were evaluated in each study.² According to the Centers for Disease Control and Prevention (CDC), numbers as high as 10–25% of Women experience arthralgia or arthritis following immunization against rubella.^{4,5} A Brazilian study that included near 2000 patients who received the MMR vaccine found a prevalence of arthritis of 1.7% among children and adults. Similarly to our patients, the arthritis was transient and none of the subjects involved in the study developed chronic arthritis.⁶

Regarding the Oxford-AstraZeneca^R vaccine against SARS-CoV-2, we have found one Korean study that describes the cases of five patients who developed polyarthralgia and myalgia three to seven days after vaccination. The patients were

not previously diagnosed with arthropathy and rheumatologic diseases and the arthralgia occurred in multiple joints, including small and large joints.⁷ There have also been reports of reactive arthritis following other vaccines against SARS-CoV-2: one report of monoarthritis of the left elbow after the Sputnik-V vaccine⁸ and three case reports (totalling five cases) of arthritis after the Sinovac vaccine (one case of monoarthritis of the left knee and four cases of polyarthritis).⁹⁻¹¹

More studies are required to measure the actual prevalence of arthritis induced by the Oxford-AstraZeneca^R vaccine. Younger women seem to be more at risk of developing this condition. Our patient's symptoms were transient and resolved within 4 days with no sequelae, which seems compatible with cases reported after other types of immunizations. Thus, we did not contraindicate the vaccine (should booster doses be recommended in the future) in this case.

We declare that the patient has given her written informed consent for the publication of this case report. This work is in agreement with current bioethical regulations in research. We did not get approval from the Institution's ethics committee, since this is a report of a single case which was written retrospectively and the patient cannot be identified in the photograph. We believe this has not negatively affected the patient's care and has not breached any ethical regulations. The authors declare that his article contains no personal information that could lead to the identification of the patient.

Funding

No funders pertaining to this article.

Conflict of interest

Authors declare to have no conflict of interest.

REFERENCES

1. Bae S, Lee YW, Lim SY, Lee JH, Lim JS, Lee S, et al. Adverse reactions following the first dose of ChAdOx1 nCoV-19 vaccine and BNT162b2 vaccine for healthcare workers in South Korea. *J Korean Med Sci.* 2021;36:e115, <http://dx.doi.org/10.3346/jkms.2021.36.e115>.

2. Panozzo CA, Pourmalek F, Brauchli Pernus Y, Pileggi GS, Woerner A, Bonhoeffer J, Brighton Collaboration Aseptic Arthritis Working Group. Arthritis and arthralgia as an adverse event following immunization: a systematic literature review. *Vaccine.* 2019;37:372-83, <http://dx.doi.org/10.1016/j.vaccine.2018.06.067>. Epub 2018.
3. Adwan MH. An update on drug-induced arthritis. *Rheumatol Int.* 2016;36:1089-97, <http://dx.doi.org/10.1007/s00296-016-3462-y>. Epub 2016 Mar 21.
4. Dudley MZ, Halsey NA, Omer SB, Orenstein WA, O'Leary ST, Limaye RJ, et al. The state of vaccine safety science: systematic reviews of the evidence. *Lancet Infect Dis.* 2020;20:e80-9, [http://dx.doi.org/10.1016/S1473-3099\(20\)30130-4](http://dx.doi.org/10.1016/S1473-3099(20)30130-4). Epub 2020.
5. Hamborsky J, Kroger A, Wolfe S, Centers for Disease Control and Prevention. *Epidemiology and prevention of vaccine-preventable diseases.* 13th ed. Washington (DC): Public Health Foundation; 2015.
6. Pileggi GS, David MM, de Paula CC, de Rosi FA, Saquy GD, Giuberti MFL, et al. Outcome of a national immunization campaign indicated that children and adult rubella vaccination does not induce the development of chronic arthritis. *Ann Rheum Dis.* 2013;71 Suppl. 3:626, <http://dx.doi.org/10.1136/annrheumdis-2012-eular.3402>.
7. Hyun H, Song JY, Seong H, Yoon JG, Noh JY, Cheong J, et al. Polyarthralgia and myalgia syndrome after ChAdOx1 nCoV-19 vaccination. *J Korean Med Sci.* 2021;36:e245, <http://dx.doi.org/10.3346/jkms.2021.36.e245>.
8. Baimukhamedov C. Arthritis of the left elbow joint after vaccination against SARS-CoV-2 infection. *Int J Rheum Dis.* 2021;24:1218-20, <http://dx.doi.org/10.1111/1756-185X.14202>. Epub 2021 Aug 6.
9. An QJ, Qin DA, Pei JX. Reactive arthritis after COVID-19 vaccination. *Hum Vaccin Immunother.* 2021;17:2954-6, <http://dx.doi.org/10.1080/21645515.2021.1920274>. Epub 2021 May 25.
10. Türk SM, Öztürk Z, Karataş D, Gönüllü E. Inactivated COVID-19 vaccine can induce reactive polyarthritis in older patients: report of two cases. *Georgian Med News.* 2021;319:100-2.
11. Unal Enginar A. Arthritis following COVID-19 vaccination: report of two cases. *Int Immunopharmacol.* 2021;101 Pt B:108256, <http://dx.doi.org/10.1016/j.intimp.2021.108256>. Epub ahead of print.