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.

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Patients with juvenile idiopathic arthritis on TNF inhibitors exposed to COVID-19 family members

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We read with great interest the study by Michelena et al [1] investigating the incidence of the Coronavirus 19 disease (COVID-19) among adult and pediatric patients with rheumatic disease receiving anti-rheumatic drugs. They found an incidence rate comparable with general populations and they did not observe an increased risk of severe COVID-19. To support the notion that these patients do not show an increased susceptibility to COVID-19 compared to healthy peers, we report four patients diagnosed with juvenile idiopathic arthritis (JIA) exposed to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) while receiving TNF inhibitors (TNFi).

During our outpatient clinics we collected data from JIA patients on TNFi with at least one COVID-19 case among households (confirmed or highly suspected) followed in the Unit of Pediatric Rheumatology of ASST G. Pini Hospital, Milan, Italy from 1st March to 31th May 2020. A survey assessing the patients' health status, therapeutic changes and possible disease flares during the SARS-CoV-2 exposure was then administered by telephone. Demographical and clinical patients' data are shown in Table 1. Patient 2 had her older sister (17-year-old) diagnosed in mid-March 2020 with interstitial pneumonia not requiring hospitalization; despite that, she did not undergo any diagnostic test for COVID-19 according to the local recommendations then in place. The other JIA patients herein included had at least one household with a positive reverse-transcription-polymerase-chain-reaction (RT-PCR) test on nasopharyngeal swabs.

Table 1
Demographical and clinical data of patients with juvenile idiopathic arthritis on TNF inhibitors exposed to COVID-19 family members

	Case 1	Case 2	Case 3	Case 4
Age at COVID-19 exposure, years	36	12	12	20
Gender	F	F	F	F
JIA category	Psoriatic	Oligoarticular	Polyarticular RF +	ERA
Disease duration (time since rheumatic diagnosis to COVID-19 exposure), years	30	11.5	2.8	13.7
Non biologic therapies	-	MTX	HCQ	MTX
TNFi	Golimumab	Golimumab	Etanercept	Infliximab
Time on TNFi (time since beginning of treatment to COVID-19 exposure), years	6	1.5	0.3	2.5
Households with positive RT-PCR on NP swab	Father[a]	-	Parents	Parents[b]
Households with highly suspected COVID-19	-	Sister[c]	Sister[d]	-
Disease status before COVID-19 exposure	Remission	Remission	Remission	Remission
COVID-19 compatible clinical pictures	Myalgia	-	Dry cough	-
Disease status after COVID-19 exposure	Persistent remission	Disease flare	Persistent remission	Disease flare
Time after COVID-19 exposure to follow-up, months	4	3	2	5

RF: rheumatoid factor; ERA: enthesitis related arthritis; MTX: methotrexate; HCQ: hydroxychloroquine; RT-PCR: reverse-transcription-polymerase-chain-reaction test; NP swab: nasopharyngeal swab;
[a] Hospitalized;
[b] Mother hospitalized;
[c] Interstitial pneumonia at X-ray;
[d] Fever and diarrhea after which she developed complex regional pain syndrome of fifth metatarsal bone of the right foot, successfully treated with a sural nerve block.

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TNFi were discontinued in all patients for a median time of 8 weeks; in the two patients receiving concomitant methotrexate (MTX), the drug was interrupted as well (3 weeks of average discontinuation time). Patient 3 did not stop hydroxychloroquine. Besides JIA, only patient 4 had other comorbidities: sensorineural deafness and undifferentiated colitis.

None of the herein reported patients experienced severe COVID-19 manifestations. Patient 1 had dorsal myalgia, never present before, which lasted few weeks. Patient 3 developed dry cough and received an oral course of azithromycin. Patients 2 and 4 were asymptomatic.

At the outpatient visit before the COVID-19 exposure, all the patients were in disease remission. During the COVID-19 exposure, patient 2 developed knee arthritis and uveitis requiring local steroids (intraarticular injection and eye drops) with a good response. Patient 4 complained of polyarthralgia (back, right hip and right midfoot); she had the longest time of TNFi discontinuation (16 weeks), while she restarted MTX after 2 weeks of discontinuation.

During this pandemic, the control of the underlying rheumatic disease is of primary importance given the increased infection susceptibility carried by an active inflammatory status [2]. Therefore, a careful evaluation of anti-rheumatic drug management assessing multiple factors (current disease activity and treatment, SARS-CoV-2 epidemiology in the patient's area, etc.) is advisable [3,4]. Our findings are in agreement with the hypothesis that JIA patients on TNFi do not show increased risk of severe COVID-19, although they might experience disease reactivation likely due to drug discontinuation [1,5]. Larger studies are advisable to better characterize the role of TNFi in children and young adults with JIA exposed to SARS-CoV-2.

Declaration of Competing Interest

None.

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