COVID-19 in paediatric rheumatology patients treated with b/tsDMARDs: a cross-sectional patient survey study

We read with great interest the article by Salvarani *et al* comparing the COVID-19 infection susceptibility and severity between the patients treated with biologic or targeted synthetic disease modifying antirheumatic drugs (b/tsDMARDs) and all residents in the Reggio Emilia area.[1] In their cohort of 1195 patients treated with b/tsDMARDs, there were nine confirmed COVID-19 cases. None of these COVID-19 cases were ≤45 years of age while only two out of 25 patients who were tested for COVID-19 were ≤45 years. They did not observe a different susceptibility or severity of COVID-19 in patients treated with these drugs.[1]

Biologic/targeted synthetic DMARDs often target pathways of the immune system and this may result in a tendency for infections.[2] Serious infections have been reported in both children and adults treated with these drugs.[3] However, the data about infection rate and severity in children on b/ts DMARDs are limited. Consistent with the findings of Salvarani *et al*, Gianfrancesco *et al* reported that the use of biologic DMARDs was not associated with a higher hospitalisation rate in the largest cohort of COVID-19 patients with rheumatic diseases (n=600).[4] However, none of the patients were below the age of 18 years in their cohort. In the same lines, the results of the study by Sanchez-Piedra *et al* suggested that COVID-19 course and mortality did not differ significantly between adult rheumatology patients treated with b/tsDMARDs and the general population.[5] To date, there is no report of a confirmed COVID-19 case among children with rheumatic diseases who are on biologic DMARDs. Thus, the COVID-19 infection rate and severity is currently unknown in paediatric rheumatology patients treated with b/tsDMARDs.

We performed a cross-sectional survey study to analyse the frequency/severity of COVID-19 in paediatric patients with rheumatic diseases, treated with b/tsDMARDs. Out of 189 paediatric rheumatology patients treated with b/ts DMARDs followed up in the Pediatric Rheumatology Unit of Hacettepe University, Ankara, Turkey, we reached 173 patients by telephone. The characteristics of these patients are presented in table 1. Thirty-one patients experienced symptoms associated with upper respiratory tract infection and 14 of these were tested for COVID-19. The results were negative in all. Three out of these 14 patients were admitted to the hospital and received intravenous antibiotic treatment. However, all were discharged within a few days without any further complications. Thus, in our cohort, the paediatric rheumatology patients treated with b/tsDMARDs did not seem to be at increased risk for COVID-19 disease or associated severe complications.

In the COVID-19 pandemic, the children are generally affected less than adults. Although the data about the COVID-19 infection rate and severity in adult patients treated with b/tsDMARDs increase with time, there is still no data regarding COVID-19 in children treated with these drugs. Filocamo *et al* also reported no confirmed COVID-19 case among their cohort of 123 paediatric rheumatology patients treated with bDMARDs.[6] Current rheumatology guidelines recommend to continue all therapies that are used in disease control during the pandemic. Furthermore, we know that active disease is an independent risk factor for infections. Thus, it would be critical to follow the accumulating evidence and continue the b/tsDMARD therapies in both adults and children during the pandemic in the absence of COVID-19 to provide an effective disease control.

Table 1 Paediatric rheumatology patients treated with biologic or targeted synthetic disease modifying antirheumatic drugs (n=173)

Characteristics	Number of patients, n (%) or mean±SD
Gender, female	81 (47)
Current age, years	13.3±4.6
Age at disease onset, years	5.2±3.9
Disease duration, months	13.3±4.6
Underlying rheumatic disease	
FMF	69 (39.8)
JIA	68 (39.3)
Monogenic vasculitis	9 (5.2)
CAPS	8 (4.6)
Primary systemic vasculitis	7 (4)
CRMO	6 (3.4)
HIDS/MKD	3 (1.7)
Systemic scleroderma	3 (1.7)
Biologic/targeted synthetic DMARDs grouped due to mechanism of action	
Anti-IL-1	86 (49.7)
Anti-TNF	61 (35.2)
Anti-IL-6	14 (8)
Anti-JAK	8 (4.6)
Anti-CD20	2 (1.2)
Anti-IL-17A	2 (1.2)
Use of concomitant csDMARD therapy	36 (20)
URTI symptoms	31 (18)
Tested for COVID-19 with RT-PCR	14 (8)
Positive RT-PCR for COVID-19	0 (0)
Hospitalisation	3 (1.7)
Need for oxygen supply	0 (0)

CAPS, cryopyrin associated periodic syndrome; COVID-19, coronavirus disease 2019; CRMO, chronic recurrent multifocal osteitis; csDMARD, conventional synthetic disease modifying anti-rheumatic drugs; FMF, familial Mediterranean fever; HIDS/MKD, hyperimmunoglobulin D syndrome/mevalonate kinase deficiency; IL, interleukin; JAK, Janus kinase; JIA, juvenile idiopathic arthritis; RT-PCR, reverse transcriptase PCR; TNF, tumour necrosis factor; URTI, upper respiratory tract infection.

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