



Patients with idiopathic inflammatory myopathies suffer from worse self-reported PROMIS physical function after COVID-19 infection: an interview-based study from the MyoCite cohort

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Received: 15 March 2022 / Revised: 4 May 2022 / Accepted: 6 May 2022 / Published online: 14 May 2022
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Dear Editor,

Patients with rheumatic diseases are known to exhibit worse outcomes with COVID-19 [1]. However, the effect on individual diseases such as idiopathic inflammatory myopathies (IIM) remains unexplored. Hence, we interviewed patients with IIM from the MyoCite cohort to understand their clinical profile and severity, and outcomes by 30-day physical function after COVID-19 infection.

A self-report e-survey with 36 questions was pilot tested and validated to cover demographics, history of COVID-19 contacts, course and severity of COVID-19 infection, influence of COVID-19 infection on physical state 1 month after

the infection, and vaccination status. Baseline characteristics were retrieved from the MyoCite registry and biobank archive [2]. PROMIS-10a, a validated self-report tool [3, 4], was used to quantify physical function [5]. Age and gender similar healthy controls (HC) were included for comparison.

Ten patients of IIM were compared with 40 controls. Fever was the most common symptom during COVID infection reported by both the groups. IIM patients were more likely to experience fatigue, chest pain, and breathlessness as compared to HC. Notably, the severity of COVID-19 infection as substantiated by pneumonia, hospitalization, and oxygen requirement was comparable in both groups in this small study population. IIM patients were also more likely to experience shortness of breath (40% v 0%), rashes (20% v 0%), and muscle weakness (30% v 0%) 30 days post-COVID than HC. Notably, 3 of 4 individuals who experienced breathlessness had ILD, suggesting the need for closer follow-up in this group.

PROMIS physical function was comparable pre-COVID in both groups. After recovery from COVID infection, 30-day PROMIS physical function scores were suggestive of weaker performance in the IIM group in specific tasks such as climbing stairs, walking more than a mile, bending, kneeling, or stooping suggesting significant decline in lower limb function. Upper limb tasks such as shampooing hair were impacted as well, albeit with mild difference (Table 1). Notably, the aggregate PROMIS physical function was comparable, suggesting overall favorable outcomes with respect to long COVID in IIM patients (Table 2).

It is noteworthy that IIM patients were less likely to be vaccinated, suggesting prevalent hesitancy in this group (50% vs 90%, p : 0.007). (Supplementary Table S1).

To conclude, IIM patients, especially those with underlying ILD, may be particularly predisposed to symptomatic COVID infection and dyspnoea on exertion 30 days post-COVID (Table 2). Short-term physical function is impacted at 30 days post-COVID-19, suggesting the need

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Table 1 Comparison of physical health 1 month after COVID-19 in IIM patients and HC

Variables	1 month after COVID-19 IIM (<i>n</i> -10)	1 month after COVID-19 HC (<i>n</i> -40)	<i>p</i> -value
Overall physical health <i>n</i> (%)			
Excellent	1 (10%)	28 (70%)	0.006
Very good	4 (40%)	5 (12.5%)	0.05
Good	0	5 (12.5%)	0.43
Fair	3 (30%)	2 (5%)	0.03
Poor	2 (20%)	0	0.04
Fatigue (median ± IQR)	4 (2–5.75)	0 (0–1)	
Pain (median ± IQR)	1 (0–6.75)	0	0.67
Did your health limit you in doing vigorous activities <i>n</i> (%)			
Not at all	5 (50%)	25 (62.5%)	0.47
Very little	1 (10%)	8 (20%)	0.47
Somewhat	3 (30%)	5 (12.5%)	0.19
Quite a lot	1 (10%)	2 (5%)	0.55
Cannot do	0	0	-
Did your health limit you in walking more than a mile (1.6 km) <i>n</i> (%)			
Not at all	6 (60%)	27 (67.5%)	0.65
Very little	0	9 (22.5%)	0.21
Somewhat	1 (10%)	2 (5%)	0.55
Quite a lot	3 (30%)	2 (5%)	0.03
Cannot do	0	0	-
Did your health limit you in climbing a flight of stairs <i>n</i> (%)			
Not at all	6 (60%)	27 (67.5%)	0.65
Very little	0	10 (25%)	0.18
Somewhat	3 (30%)	2 (5%)	0.03
Quite a lot	1 (10%)	1 (2.5%)	0.31
Cannot do	0	0	-
Did your health limit you in lifting or carrying groceries <i>n</i> (%)			
Not at all	7 (70%)	30 (75%)	0.7
Very little	1 (10%)	7 (17.5%)	0.56
Somewhat	2 (20%)	2 (5%)	0.14
Quite a lot	0	1 (2.5%)	0.89
Cannot do	0	0	-
Did your health limit you in bending, kneeling, or stooping <i>n</i> (%)			
Not at all	7 (70%)	36 (90%)	0.12
Very little	0	3 (7.5%)	0.004
Somewhat	3 (30%)	0	0.02
Quite a lot	0	1 (2.5%)	0.89
Cannot do	0	0	-
Were you able to do chores such as cleaning the floor or yard work <i>n</i> (%)			
Without any difficulty	7 (70%)	29 (72.5%)	0.87
With a little difficulty	0	6 (15%)	0.36
With some difficulty	1 (10%)	0	0.12
With much difficulty	0	2 (5%)	0.84
Cannot do	2 (20%)	3 (7.5%)	0.64
Were you able to dress yourself, including tying shoelaces and buttoning your clothes <i>n</i> (%)			
Without any difficulty	8 (80%)	38 (95%)	0.14
With a little difficulty	0	2 (5%)	0.84
With some difficulty	1 (10%)	0	0.12
With much difficulty	1 (10%)	0	0.12
Cannot do	0	0	-
Were you able to shampoo your hair <i>n</i> (%)			
Without any difficulty	7 (70%)	40 (100%)	0.02
With a little difficulty	1 (10%)	0	0.12
With some difficulty	2 (20%)	0	0.04
With much difficulty	0	0	-
Cannot do	0	0	-

Table 1 (continued)

Variables	1 month after COVID-19 IIM (<i>n</i> -10)	1 month after COVID-19 HC (<i>n</i> -40)	<i>p</i> -value
Were you able to wash and dry your body <i>n</i> (%)			
Without any difficulty	9 (90%)	40 (100%)	0.12
With a little difficulty	1 (10%)	0	0.12
With some difficulty	0	0	-
With much difficulty	0	0	-
Cannot do	0	0	-
Were you able to sit and get up from the toilet <i>n</i> (%)			
Without any difficulty	8 (80%)	37 (92.5%)	0.25
With a little difficulty	1 (10%)	1 (2.5%)	0.55
With some difficulty	1 (10%)	1 (2.5%)	1
With much difficulty	0	1 (2.5%)	0.89
Cannot do	0	0	-
Did you have any symptoms in the month before and after you got COVID-19 <i>n</i> (%)			
None	4 (40%)	26 (65%)	0.15
Rashes	2 (20%)	0	0.04
Generalized fatigue	3 (30%)	7 (17.5%)	0.38
Muscle weakness	3 (30%)	0	0.02
Skin thickening of hands or other areas	0	0	-
Loss of hair or bald spots	0	4 (10%)	0.53
Fingertip ulcers	1 (10%)	0	0.12
Oral ulcers	0	0	-
Joint pain or swelling in hands	1 (10%)	0	0.12
Joint pain or swelling in other joints	1 (10%)	2 (5%)	0.55
Chest pain	0	0	-
Shortness of breath	4 (40%)	0	0.009
Raynaud's	0	0	-
Elevated muscle enzyme in blood (high CK or creatine kinase level)	4 (40%)	-	-
Elevated inflammatory markers in blood (high ESR or CRP)	5 (50%)	-	-
Others	0	2 (5%) (1: cough, 1 UTI)	0.84

Table 2 Comparison of congregate PROMIS physical function scores

	<i>N</i>	Median	IQR	<i>t</i>
Pre-COVID				
IIM	10	49	3.5	0.195
HC	40	50	0.25	
Post-COVID				
IIM	10	47	8.25	0.075
HC	40	50	4	
IIM				
Pre-COVID	10	49	3.5	0.092
Post-COVID	10	47	8.25	

for closer long-term follow-up and systematically analyze 60- and 90-day outcomes. We hope that future studies in a larger study population allowing analysis of stratified subsets of disease activity would provide further understanding of long COVID in myositis patients. Difficulty in performing specific tasks post-COVID may warrant focused therapies for the specific muscle groups involved.

Vaccine hesitancy is prevalent among Indian patients with IIM, and may benefit from focused group education initiatives [6, 7]. (Supplementary Table S2).

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s10067-022-06204-0>.

Author contribution All authors reviewed the study design and contributed to data interpretation and critical revision of the article. All authors approved the version of the article to be published.

Data availability All data generated or analyzed during this study are included in this published article [and its supplementary information files].

Declarations

Ethical approval IRB Approval Number: 2021–143-IP-EXP-39. Date of Approval: 08 June 2021. Approving Institution: Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPGI), Lucknow, Uttar Pradesh, India.

Disclosures None.

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