PAIN AND FATIGUE PERCEPTIONS, AND THEIR RELATIONSHIP WITH THE DISEASE STATUS OF PATIENTS WITH SYSTEMIC AUTOIMMUNE MYOPATHIES BEFORE AND DURING THE COVID-19 PANDEMIC PERIOD: A CROSS-SECTIONAL AND PROSPECTIVE COHORT STUDY

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BACKGROUND

Currently no studies have assessed general pain and fatigue and their association with the disease status of patients with systemic autoimmune myopathies (SAMs) in terms of the impact of the COVID-19 pandemic on these parameters. This lack of research motivated us to assess the present study.

METHODS

This is a cross-sectional and prospective cohort study that included 72 consecutive patients with SAMs who were matched by age and gender with 67 healthy individuals. The patients engaged with a face-to-face interview via validity survey to measure disease status, assess a visual analog scale for pain and fatigue, and fatigue severity in two periods: January 2020—March 2020 (before the Brazilian COVID-19 pandemic, phase I), and December 2020—March 2021 (during the pandemic, phase II). For cross-sectional analysis, patients' data from phase I were compared to healthy individuals' information, whereas for prospective analysis, data of the patients who were assessed in phase II were compared to the same patients' data from phase I. The data distribution was assessed by Shapiro–Wilk adherence test and the group was compared with student's t-test or Mann–Whitney test. Correlation was assessed by Pearson or Spearman correlation. Weak correlation was considered with $\rho < 0.30$ (weak); $\rho = 0.30$ to 0.49 (moderate), $\rho = 0.50$ to 0.69 (strong) and $\rho \geq 0.70$ (very strong). P values ≤ 0.05 were considered statistically significant. Values of $p \leq 0.05$ were considered statistically significant.

RESULTS

In general, patients with SAMs had stable disease. The patients had significantly more pain perception, comparable fatigue perception and fatigue severity, and a tendency of reduced physical activity levels when compared to the healthy individuals (Table 1). During the COVID-19 pandemic period, the disease activity, pain and fatigue perceptions, fatigue severity, and physical activity levels remained unchanged (Table 2). Despite this, the pain and fatigue perceptions correlated significantly with patients' visual analogue scale, the patient health outcome, and fatigue severity. In addition, the pain perception correlated to creatine phosphokinase, whereas fatigue perceptions correlated to physicians' visual analogue scale (Table 3).

CONCLUSION

The study showed which patients with SAMs have significantly increased pain perceptions compared to healthy individuals. During the COVID-19 pandemic period, the pain and fatigue perceptions remained unchanged in patients with SAMs but they correlated to several disease status parameters.

KEYWORDS

Idiopathic inflammatory myopathies, COVID-19 pandemic, Pain, Fatigue, Quality of life.

FUNDING

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Table 1. General characteristics of patients with systemic autoimmune myopathies and healthy individuals

	All (n = 72)	ASSD (n = 36)	IMNM (n = 8)	DM (n = 28)	Control (n = 67)	P value*
Demographics						
Age (years)	48.1 ± 12.8	47.2 ± 14.9	53.6 ± 12.2	47.7 ± 11.7	46.2 ± 15.4	0.458
Female (%)	54 (75.0)	25 (69.4)	7 (87.5)	22 (78.6)	58 (86.6)	0.092
BMI (kg/m ²)	27.2 ± 6.4	27.9 ± 7.1	23.5 ± 6.1	27.3 ± 5.4	25.2 ± 3.7	0.197
Disease status						
Physician' VAS (0–10)	0.0 (0.0–0.0)	0.0 (0.0–0.0)	0.0 (0.0–0.0)	0.0 (0.0–0.0)	-	-
Patient's VAS (0–10)	4.2 (0.0–6.5)	3.0 (0.0–7.0)	5.0 (2.5–5.7)	5.0 (2.0–6.7)	-	-
HAQ (0.0–3.0)	0.4 (0.0–1.2)	0.3 (0.0–1.0)	0.4 (0.0–1.8)	0.7 (0.3–1.6)	-	-
MMT-8 (0–80)	80 (80–80)	80 (80–80)	80 (80–80)	80 (80–80)	-	-
Creatine phosphokinase (U/L)	109 (67–201)	116 (71–193)	300 (54–594)	94 (65–194)	-	-
Treatment						
Prednisone (%)	21 (29.2)	7 (19.4)	2 (25.0)	12 (42.9)	-	-
Prednisone (mg/day)	0.0 (0.0–5.0)	0.0 (0.0–5.0)	0.0 (0.0–15.0)	0.0 (0.0–10.0)	-	-
Methotrexate (%)	6 (8.3)	2 (5.6)	1 (12.5)	3 (10.7)	-	-
Azathioprine (%)	14 (19.4)	5 (13.5)	1 (12.5)	8 (28.6)	-	-
Mycophenolate mofetil (%)	14 (19.4)	7 (19.4)	3 (37.5)	4 (14.3)	-	-
Other drugs						
Antihypertensive (%)	24 (33.3)	9 (25.0)	1 (12.5)	14 (50.0)	-	-
Antidepressants (%)	4 (5.6)	1 (2.8)	0	3 (10.7)	-	-
Pain relievers (%)	13 (18.1)	4 (11.1)	1 (12.5)	8 (28.6)	-	-
Lipid-lowering drugs (%)	5 (6.9)	3 (10.7)	0	2 (5.6)	-	-
Comorbidities						
Arterial hypertension (%)	24 (33.3)	9 (25.0)	1 (12.5)	14 (50.0)	-	-
Dyslipidemia (%)	15 (20.8)	8 (22.2)	2 (25.0)	5 (17.9)	-	-
Hypothyroidism (%)	5 (6.9)	3 (8.3)	0	2 (7.1)	-	-
Diabetes mellitus (%)	14 (19.4)	4 (11.1)	0	10 (35.7)	-	-
Depression (%)	1 (1.4)	0	0	1 (3.6)	-	-
Fibromyalgia (%)	6 (8.3)	3 (8.3)	0	3 (10.7)	-	-
Pain perception (VAS)						
Light (0.0–3.0)	26 (36.1)	18 (50.0)	2 (25.0)	6 (21.4)	34 (50.7)	
Moderate (4.0–8.0)	29 (40.3)	10 (27.8)	5 (62.5)	14 (50.0)	26 (38.8)	0.045
Intense (8.0–10)	17 (23.1)	8 (22.2)	1 (12.5)	8 (28.6)	7 (10.4)	
Fatigue perception (VAS)						
Light (0.0–3.0)	24 (33.3)	16 (44.4)	2 (25.0)	8 (21.4)	20 (29.9)	
Moderate (4.0–8.0)	27 (37.5)	10 (27.8)	3 (37.5)	14 (50.0)	30 (44.8)	0.702
Intense (8.0–10)	21 (29.2)	10 (27.8)	3 (37.5)	8 (28.6)	17 (25.4)	
Fatigue severity						
FSS (0.0–7.0)	4.0 ± 2.1	3.4 ± 1.8	3.5 ± 0.4	4.9 ± 0.7	3.6 ± 1.5	0.726
Physical activity levels						
Low	52 (72.2)	26 (72.2)	7 (87.5)	19 (67.9)	37 (56.1)	
Moderate	16 (22.2)	8 (22.2)	1 (12.5)	7 (25.0)	14 (21.2)	0.053
High	4 (5.6)	2 (5.6)	0	2 (7.1)	15 (22.7)	

Data presented as mean ± standard deviation, median interquartile (25–75%) or frequency (%). BMI: body mass index; FSS: fatigue severity scale. HAQ: health assessment questionnaire; MMT-8: manual muscle testing; VAS: visual analogue scale. * Comparison between all patients and control group.

Table 2. General characteristics of 43 patients with systemic autoimmune myopathies at before and during follow-up (COVID-19 pandemic period)

	Before	Following-up	P value
Demographics			
Body mass index (kg/m ²)	28.2 ± 7.1	27.5 ± 6.4	0.767
Disease status			
Physician's VAS (0–10)	0.0 (0.0–0.0)	0.0 (0.0–0.0)	0.552
Patient's VAS (0–10)	5.0 (2.5–7.0)	5.0 (2.0–7.0)	0.777
HAQ (0.00–3.00)	0.5 (0.0–1.3)	0.2 (0.0–1.0)	0.325
MMT-8 (0–80)	80 (80–80)	80 (80–80)	0.155
Creatine phosphokinase (U/L)	112 (68–216)	118 (68–214)	0.876
Treatment			
Prednisone (%)	11 (25.6)	12 (27.9)	0.808
Prednisone (mg/day)	0.0 (0.0–2.5)	0.0 (0.0–2.0)	> 0.999
Methotrexate (%)	5 (11.6)	10 (23.3)	0.155
Azathioprine (%)	6 (14.0)	10 (23.3)	0.268
Mycophenolate mofetil (%)	13 (30.2)	12 (27.9)	0.812
Comorbidities			
Depression (%)	0	2 (4.7)	-
Fibromyalgia (%)	4 (9.3)	5 (11.6)	0.725
Pain perception (VAS)			
Light (0.0–3.0)	15 (34.9)	16 (37.2)	0.963
Moderate (4.0–8.0)	16 (37.2)	16 (37.2)	
Intense (8.0–10)	12 (27.9)	11 (25.6)	
Fatigue perception (VAS)			
Light (0.0–3.0)	13 (30.2)	12 (27.9)	0.905
Moderate (4.0–8.0)	15 (34.9)	17 (39.5)	
Intense (8.0–10)	15 (34.9)	14 (32.6)	
Fatigue severity			
FSS (0.0–7.0)	4.1 ± 1.9	4.5 ± 1.8	0.088
Physical activity levels			
Low	31 (72.1)	33 (76.7)	0.669
Moderate	9 (20.9)	6 (14.0)	
High	3 (7.0)	4 (9.3)	

Data presented as mean ± standard deviation, median interquartile (25–75%) or frequency (%). FSS: fatigue severity scale. VAS: visual analogue scale; HAQ: health assessment questionnaire; MMT-8: manual muscle testing; MYOACT: myositis disease activity assessment VAS. * Comparison between patients before and during COVID-19 pandemic period.

Table 3. The correlation between pain perception with demographics, clinical, laboratory, comorbidities and physical activity levels parameters of 43 patients with systemic autoimmune myopathies before and during follow-up (COVID-19 pandemic period)

	Before		Follow-up	
	rho	P value	Rho	P value
Demographics				
Age	-0.75	0.630	0.20	0.200
Body mass index	0.29	0.060	0.10	0.539
Clinical parameters				
Physician's visual analog scale	0.28	0.065	0.18	0.245
Patient's visual analog scale	0.35	0.019	0.61	0.001
HAQ	0.50	0.001	0.42	0.004
MMT-8	-0.16	0.298	0.01	0.995
Laboratory				
Creatine phosphokinase	-0.22	0.149	-0.37	0.014
Fatigue severity				
FSS	0.24	0.110	0.31	0.042
Physical activity levels	-0.39	0.008	-0.11	0.472

FSS: fatigue severity scale. VAS: visual analogue scale; HAQ: health assessment questionnaire; MMT-8: manual muscle testing; MYOACT: myositis disease activity assessment VAS.

Table 4. The correlation between fatigue perception with demographics, clinical, laboratory, comorbidities and physical activity levels parameters of 43 patients with systemic autoimmune myopathies before and during following-up (COVID-19 pandemic period)

	Before		Following up	
	rho	P value	rho	P value
Demographics				
Age	-0.14	0.357	0.18	0.225
Body mass index	0.45	0.002	0.14	0.370
Clinical parameters				
Physician' visual analog scale	0.37	0.014	0.31	0.037
Patients' visual analog scale	0.47	0.001	0.64	0.001
HAQ	0.38	0.012	0.48	0.001
MMT-8	-0.26	0.087	0.10	0.948
Laboratory				
Creatine phosphokinase	-0.77	0.622	-0.29	0.056
Fatigue severity				
FSS	0.31	0.043	0.37	0.014
Physical activity levels	-0.35	0.020	-0.19	0.211

FSS: fatigue severity scale. VAS: visual analogue scale; HAQ: health assessment questionnaire; MMT-8: manual muscle testing; MYOACT: myositis disease activity assessment VAS.