Prevalence of Pain and Factors Associated with Pain Levels in Patients with Idiopathic Inflammatory Myopathies

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Background

- Idiopathic inflammatory myopathies (IIM) were traditionally believed to cause a *painless* weakness; thus, pain has long been overlooked as a disease symptom

- Aims: (i) to examine the prevalence of pain and factors associated with pain in adults with IIM, and (ii) to assess the association between pain and myositis disease activity

Methods

- FORWARD is a longitudinal prospective registry of adults with rheumatic diseases in the US who are recruited from rheumatology clinics

- Comparison of patients with at least moderate pain (>3) vs ≤3 on 10-point numeric rating scale with t-test

- Linear regression and mixed effects models for association between pain and disease activity

Results

- ~86% of patients with IIM reported pain

❋ Patients who were Black and obese had significantly higher levels of pain
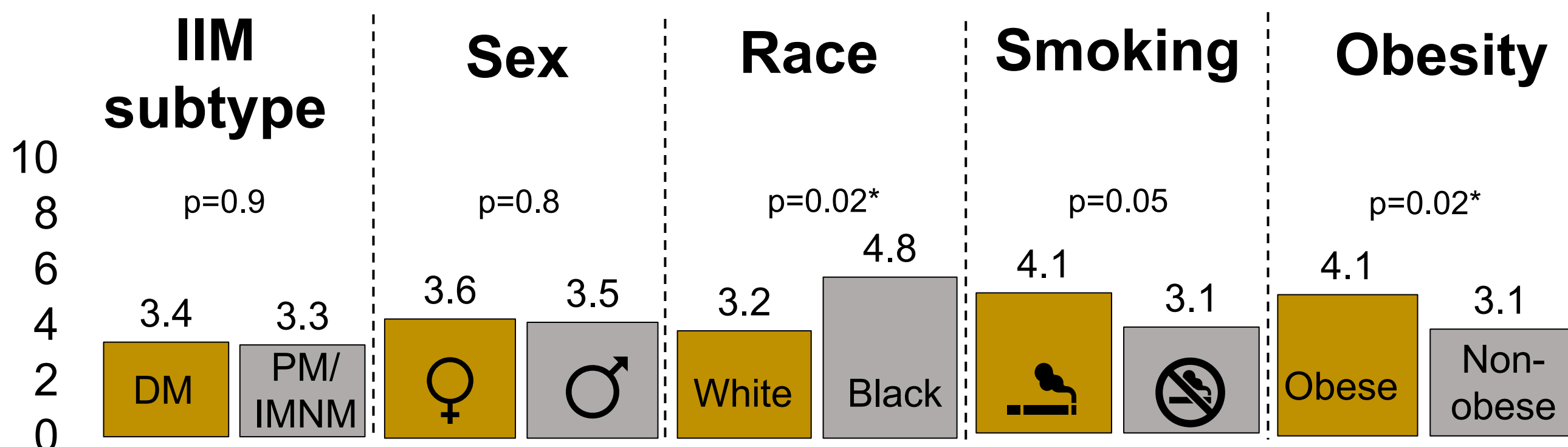
❋ Patients with IIM who have pain >3 were more likely to be younger, ever smoker, have higher BMI, lower education level and annual income

Sociodemographics	Pain ≤3 (n=104)	Pain >3 (n=85)	P-value
Age	57.5 ± 14.3	53.1 ± 13.4	0.01*
Female (%)	80 (79.2%)	68 (81.0%)	0.9
White, non-Hispanic (%)	88 (89.8%)	57 (78.1%)	0.058
Ever smoker (%)	38 (36.5%)	48 (56.5%)	0.009*
Body mass index (kg/m^2)	27.3 ± 6.0	29.9 ± 7.3	0.01*
Education level (years)	14.5 ± 2.1	13.6 ± 2.2	0.005*
Total annual income ($)	60,900 ± 30,900	45,800 ± 28,900	0.002*
Symptom duration (yrs)	9.0 ± 8.1	8.2 ± 6.7	0.7

❋ Patients with IIM who have pain >3 had more fatigue, disease activity, disability, quality of life, lower health satisfaction, and higher number of ED visits

Outcomes	Pain ≤3	Pain >3	P-value
Fatigue VAS (0-10)	3.0 ± 2.7	6.9 ± 2.6	<0.0001*
Patient Global Dis Activity (0-10)	2.6 ± 2.3	5.6 ± 2.2	<0.0001*
HAQ (0-3)	0.8 ± 0.7	1.4 ± 0.5	<0.0001*
Patient Activity Scale (0-10)	2.1 ± 1.5	5.6 ± 1.6	<0.0001*
SF-36 Physical component (0-100)	41.1 ± 10.4	30.0 ± 8.5	<0.0001*
SF-36 Mental component (0-100)	50.5 ± 10.2	42.4 ± 12.5	<0.0001*
Polysymptomatic distress (0-31)	7.5 ± 5.6	17.9 ± 6.7	<0.0001*
Health satisfaction (0-4)	2.6 ± 1.2	1.4 ± 1.2	<0.0001*
General practitioner visit (#)	1.8 ± 1.3	1.9 ± 1.4	0.5
Emergency department visit (#)	0.4 ± 0.7	1.0 ± 1.2	0.001*

❋ Patients with IIM who have pain >3 had higher comorbidity index and were more likely to have depression, anxiety, and diabetes mellitus

Comorbidities	Pain ≤3	Pain >3	P-value
Comorbidity index (0-9)	1.9 ± 1.5	2.4 ± 1.8	0.03*
Osteoarthritis	14 (13.5%)	15 (17.6%)	0.5
Depression	16 (16.3%)	33 (44.6%)	<0.0001*
Anxiety	12 (12.1%)	26 (35.1%)	<0.0001*
Hypertension	52 (50.0%)	42 (49.4%)	1
Myocardial infarction	3 (2.9%)	7 (8.2%)	0.2
Diabetes mellitus	8 (7.7%)	17 (20.0%)	0.02*
Cancer	18 (17.3%)	11 (12.9%)	0.5
Renal disorder	8 (7.7%)	11 (12.9%)	0.3
Pulmonary disorder	25 (24.0%)	26 (30.6%)	0.4
Gastrointestinal disorder	44 (42.3%)	49 (57.6%)	0.051
Cardiac condition	19 (18.3%)	17 (20.0%)	0.9

❋ Patient global disease activity was significantly associated with pain after controlling for significant variables* in univariate models

	Cross-sectional			Longitudinal		
	Multivariable linear regression model			Multivariable linear mixed model		
	β	SE	p value	β	SE	p value
Pt Global Dis Activity	0.37	0.08	<0.0001*	0.33	0.03	<0.0001*
Sociodemographic variables						
Age	-0.004	0.01	0.8	-0.02	0.01	0.04*
Race (white)	-0.62	0.59	0.3	-0.62	0.44	0.2
Smoking (yes)	0.16	0.44	0.7	-	-	-
Body mass index	-	-	-	0.05	0.02	0.002*
Education level (yrs)	0.12	0.11	0.2	-0.10	0.07	0.2
Total income ($)	-0.01	0.01	0.1	-	-	-
Comorbidities						
Comorbidity index$^\phi$	0.06	0.12	0.6	-	-	-
Depression	0.84	0.52	0.1	0.18	0.17	0.3
Anxiety	0.46	0.57	0.4	0.25	0.17	0.1
Diabetes mellitus	0.53	0.59	0.4			
Pulmonary disorder	-	-	-	-0.15	0.19	0.4
GI disorder	-0.09	0.40	0.8	-	-	-
Medications						
NSAIDs	0.79	0.43	0.07	0.49	0.15	0.001*
Opioids	1.92	0.52	0.0004*	0.79	0.18	<0.0001*

*All available variables were tested in univariate regression models and only those that were found to be significant were included in the multivariable models
ϕ Comorbidity index and rest of the comorbidities were assessed in separate multivariable models

Conclusion

- In this prospective cohort of patients with IIM, pain was prevalent and associated with poor sociodemographic factors, worse clinical outcomes, lower health satisfaction and higher care utilization

- Pain was significantly associated with patient-reported myositis disease activity

- These results highlight the critical need to better understand the pain experienced by patients with IIM to best address their needs and to provide a patient-centric care

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The National Databank for Rheumatic Diseases