PROMIS Demonstrates the Range of HRQOL Impairments in Patients with New Inflammatory Arthritis due to Cancer Immunotherapy

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Introduction

- Immune checkpoint inhibitor-induced inflammatory arthritis (ICI-IA) is an impactful and often persistent side effect of cancer immunotherapy that can cause permanent joint damage
- There are key clinical differences in terms of numbers and types of joints, tendons, and muscular involvement between ICI-IA and traditional forms of arthritis
- Patients with ICI-IA also have cancer and may experience additional side effects of their disease and cancer treatment
- Little is known about the magnitude of impact of ICI-IA on HRQOL

Objectives

- To evaluate symptoms and impacts measured by PROMIS in patients with ICI-IA
- To compare ICI-IA patients to patients seen in the Consortium of Early Arthritis Cohorts USA (CATCH-US), a multicenter cohort study of patients with recent-onset inflammatory arthritis
- To determine the correlation of PROMIS measures across levels of ICI-IA disease activity

Materials and Methods

- Patients seen at Johns Hopkins with rheumatologist diagnosed ICI-IA (n=100) and who filled out PROMIS questionnaires (Short Forms) at baseline rheumatology visits were included
- Patients seen in CATCH-US with early inflammatory arthritis also completed PROMIS Profile 29 for the same domains. Data from baseline visits of patients not taking methotrexate were evaluated (n=75)
- PROMIS domains included physical function, ability to participate in social roles, pain interference, fatigue, anxiety, depression, and sleep disturbance
- Arthritis disease activity was measured by the clinical disease activity index (CDAI)
- Patients with ICI-IA were divided by CDAI categories, and PROMIS scores were compared with one way ANOVA

Results

Table 1. Baseline demographics and arthritis characteristics

Variable	ICI-IA Cohort	CATCH-US Cohort
Age (in years) at baseline	61.0 (12.8)	45.3 (16.3)
Female	59.2%	82.8%
Swollen joint count (28)	7.2 (5.5)	4.7 (5.1)
Tender joint count (28)	4.6 (4.3)	3.8 (4.7)
CDAI	20.2 (10.3)	9.0 (9.3)

Table 2. PROMIS Measures in ICI-IA and CATCH-US Cohorts

	ICI-IA cohort	CATCH-US cohort
PROMIS Domain	Mean (SD)	Mean (SD)
Physical Function	39.8 (7.7)	46.7 (8.7)
Pain Interference	59.3 (8.6)	55.3 (8.1)
Fatigue	56.4 (10.8)	49.4 (12.8)
Anxiety	51.5 (9.4)	53.2 (9.3)
Depression	49.0 (8.2)	49.7 (9.2)
Sleep Disturbance	56.7 (3.6)	52.8 (8.7)
Ability to Participate	45.7 (8.3)	46.5 (10.0)

Table 3. Comparison of PROs by CDAI category for patients with ICI-IA

PROMIS domain	Low disease activity N=14	Moderate disease activity N=55	High disease activity N=29	p-value
Physical function	43.5 (8.4)	39.6 (6.6)	34.1 (4.7)	**0.0018**
Pain interference	57.6 (7.3)	59.4 (7.1)	65.6 (6.6)	**0.0054**
Sleep disturbance	55.8 (1.4)	57.4 (2.4)	55.9 (2.1)	**0.0403**
Ability to participate	45.2 (9.6)	46.3 (7.2)	39.5 (5.7)	**0.0057**
Anxiety	45.2 (7.3)	50.7 (8.4)	54.6 (9.7)	0.0535
Depression	43.7 (4.7)	50.6 (7.3)	50.0 (8.4)	0.0836
Fatigue	58.4 (13.7)	57.7 (10.6)	58.5 (8.2)	0.962

Summary of Results

- Patients with ICI-IA have worsened pain interference, fatigue, and physical function compared to population normative values and to patients with early inflammatory arthritis
- Levels of anxiety and depression were similar to the general population and between groups
- Some symptoms and impacts increase significantly with ICI-IA disease activity, namely physical function, pain interference, sleep disturbance, and participation
- Fatigue was similar across all levels of ICI-IA disease activity and may represent a separate effect of ICIs

Limitations

- Different length PROMIS instruments were used in the 2 cohorts
- The baseline visit for patients in the ICI-IA cohort were more proximate to the onset of symptoms than in CATCH-US
- Patients in the CATCH-US cohort were younger and had lower levels of overall arthritis disease activity, potentially leading to PROMIS scores closer to population norms

Conclusions

- **PROMIS measures demonstrate the range and severity of HRQOL impacts seen in patients with ICI-IA**
- **Fatigue may be especially troublesome for ICI-IA patients, regardless of their arthritis disease activity**

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