Non-Radiographic Spondyloarthritis Has Greater Work Instability than Other Spondyloarthritis Subtypes in a National Database

Sherry Rohekar[1], Robert D. Inman[2], Renise Ayearst[3], Proton Rahman[4], Walter Maksymowych[5], Dafna D. Gladman[2]

[1]Schulich School of Medicine and Dentistry, Western University, London, ON; [2]Toronto Western Research Institute, University Health Network, University of Toronto, Toronto ON; [3]Toronto Western Hospital, University of Toronto, Toronto ON; [4]Memorial University, St. John's, NF; [5]University of Alberta, Edmonton AB

Background

- Clinical subsets of spondyloarthritis (SpA) such as ankylosing spondylitis (AS) and psoriatic arthritis (PsA) can have significantt impact on work performance and attendence
- Prior to becoming work disabled, patients' functional abilities do not match their work demands
- This period of time is one of work instability (WI)
- To date, there have not been any large studies examining WI in SpA
- The Work Instability Scale for AS (AS-WIS) is a validated measure of work instability in a SpA population

Objectives

- Determine the characteristics of WI in a large population of patients with SpA
- Identify risk factors for higher WI, such as disease type, demographic features, medication use and physical findings
- Determine correlations with commonly used outcome measures in SpA

Methods

- Patients were recruited from two large, well established cohorts of SpA: the Spondyloarthritis Researech Consortium of Canada (SPARCC) and the International Psoriasis and Arthritis Research Team (IPART)
- WI was evaluated using a validated questionnaire, the AS-WIS
  - Scores range from 0-20, with higher scores indicating greater WI
  - Scores <11 are considered low risk for job loss
  - Scores between 11-18 are considered medium risk for job loss
  - Scores between 19-20 are considered at high risk for job loss
- Standard protocols were completed at the time of completion of the AS-WIS, including a detailed history, physical examination, physician-reported outcome measures and patient-reported outcome measures
- AS-WIS results were tabulated only on those who were currently employed
- Statistical analysis was performed using SPSS 20.0 and included basic descriptives, comparison of means, ANOVA, Pearson correlation, linear regression and multinomial regression

Results

Demographics

486 respondents

327 (67.3%) employed

Location:
- 50.8% Toronto PsA clinic
- 46.5% Toronto AS clinic
- 2.8% London SpA clinic

Gender:
- 69.7% male
- 30.3% female

Disease Type:
- 52.0% PsA
- 39.8% AS
- 3.6% USpA
- 3.0% nXRSpA
- 0.9% ReA

Education Level:
- 59.3% university
- 25.4% college
- 12.8% high school graduate
- 2.1% high school incomplete
- 0.3% ≤ grade 8

Drug Use:
- 59.0% NSAIDs
- 32.5% DMARDs
- 53.2% biologics

Comorbid Conditions:
- 41.9% peripheral arthritis
- 41.3% PsO
- 31.6% concurrent illness (includes autoimmune, hyperlipidemia and liver disease)
- 19.8% heart
- 11.9% iritis
- 10.9% GI
- 5.2% GU
- 5.2% CNS
- 4.9% lung
- 3.0% diabetes

Results

Demographics

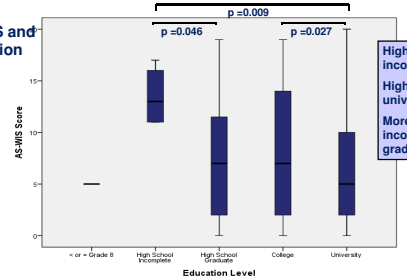
Characteristic	Mean	Standard Deviation
Age (years)	45.7	11.6
Swollen Join Count (SJC)	0.08	0.42
Tender Joint Count (TJC)	0.87	3.0
Damaged Joint Count (DJC)	3.8	9.4

Outcome Measure	Mean	Standard Deviation
MD Global Assessment	1.8	0.89
EQ5D	0.92	0.28
DLQI	2.7	4.2
HAQ	0.28	0.51
FSS	3.7	2.7
BAS-G	2.9	2.4
BASDAI	2.8	2.0
BASFI	1.8	2.0
ASQoL	3.8	4.6
FACIT	41.3	10.0
SF-PCS	44.7	10.4
SF-MCS	49.8	10.5
Back Pain Patient Global Assessment	2.6	2.2

AS-WIS Score

Mean AS-WIS Score 6.8 (low risk). (SD 5.9, min. 0, max. 20)

AS-WIS and Education

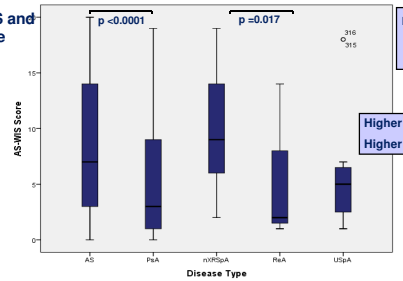


Higher WI in high school incomplete vs. university.

Higher WI in college vs. university.

More WI in high school incomplete vs. high school grad.

AS-WIS and Disease Type



nXRSpA had the highest level of WI (mean WIS 10.2, SD 5.5).

Higher WI in AS vs. PsA.

Higher WI in nXRSpA vs. PsA.

AS-WIS and Physical Exam

No correlation between AS-WIS and swollen joint count.

AS-WIS and tender joint count are correlated. Pearson correlation coefficient 0.17, p=0.003.

No correlation between AS-WIS and total damaged joint count.

AS-WIS and Medications

Higher WI in NSAID (AS-WIS 7.9, SD 6.1) users vs. non-NSAID users (AS-WIS 5.2, SD 5.3), p<0.0001.

No difference between DMARD users and non-DMARD users.

No difference between anti-TNF users and non-anti-TNF users.

Results

AS-WIS and Comorbidity

Significant	Non-Significant
GI history •Mean AS-WIS 6.6 (SD 5.7) vs 8.8 (SD 6.9); p=0.042	Iritis
Peripheral arthritis, enthesitis or dactylitis •Mean AS-WIS 6.0 (SD 5.6) vs. 8.0 (SD 6.1); p=0.003)	Lung history
	Heart history
	GU history
	CNS history
	Psoriasis history
	Concurrent illness
	Diabetes

AS-WIS and Outcome Measures

Outcome Measure	Pearson Correlation Coefficient
MD Global Assessment	0.43
EQ5D	-0.42
DLQI	0.40
HAQ	0.53
FSS	0.74
BAS-G	0.68
BASDAI	0.70
BASFI	0.65
ASQoL	0.79
FACIT	-0.82
SF-PCS	-0.71
SF-MCS	-0.57
Back Pain Patient Global Assessment	0.59

Very good correlation between AS-WIS and all outcome measures. p<0.0001 for each analysis.

Linear Regression

Linear regression was carried out using all significant variables from the simple analysis.

Significant variables in the linear regression model were gender, education level, history of GI disease and history of NSAID use.

Multinomial Logistic Regression

Multinomial logistic regression was carried out using all significant variables from the linear regression. AS-WIS was categorized as low, medium and high risk. Reference category: Low Risk.

Variable	Exp(B)	95% CI for Exp(B) (lower, upper)	Significance
Medium Risk			
Gender	0.62	0.35,1.11	0.112
Education Level	0.61	0.44, 0.84	0.003
GI History	2.37	1.03, 5.43	0.042
Peripheral Arthritis	1.76	1.01, 3.07	0.046
High Risk			
Gender	0.76	0.20, 2.85	0.685
Education Level	0.56	0.28, 1.10	0.090
GI History	5.55	1.28, 24.0	0.022
Peripheral Arthritis	3.18	0.85, 11.81	0.084

Significant variables for medium risk of WI:
- **Education level**
- **GI history**
- **Peripheral arthritis history**

Significant variables fro high risk of WI:
- **GI history**

Conclusions

- Overall, WI was low (mean WIS 6.8, SD 5.9).
- nXRSpA had the most WI (mean WIS 10.2, SD 5.5).
- AS and nXRSpA had more WI than PsA.
- University educated patients had less WI.
- WI was greater in those who had a history of GI disease, peripheral arthritis and NSAID use.
- Commonly assessed outcome measures had significant correlation with AS-WIS.

Strengths and Limitations

- Strengths
  - First large study of WI in a large, geographically diverse population of patients with SpA
- Limitations
  - AS-WIS not validated in PsA
  - Cross-sectional study design, so does not examine WI over time or predict future WI