

# The impact of low back pain on quality of life in patients with rheumatoid arthritis

Miura K.<sup>1,2</sup>, Morita O.<sup>1</sup>, Hirano T.<sup>2</sup>, Watanabe K.<sup>2</sup>, Kondo N.<sup>2</sup>, Fujisawa J.<sup>2</sup>,  
Endo N.<sup>2</sup>, Netsu T.<sup>3</sup>, Hanyu T.<sup>3</sup>, Shobugawa Y.<sup>4</sup>

<sup>1</sup>Nagaoka Red Cross Hospital, Spine and Spinal Cord Surgery, Nagaoka, Japan

<sup>2</sup>Niigata University, Orthopedic Surgery, Niigata, Japan

<sup>3</sup>Nagaoka Red Cross Hospital, Rheumatology, Nagaoka, Japan

<sup>4</sup>Niigata University, International Health, Niigata, Japan

## **Introduction**

Low back pain (LBP) is more common in patients with rheumatoid arthritis (RA) compared to in general population. The relationship between LBP and HRQOL in patients with RA were still unknown.

## **Purpose**

The aim of this study is to identify the factors including lumbar lesions, parameters of spinopelvic alignment, and LBP influencing the HRQOL in RA patients.

# **Materials and Methods**

1206 patients were enrolled from Nagaoka Red Cross Hospital and Niigata University Hospital.

Patients with previous spine surgery and/or unable to stand were excluded.

Patient-reported HRQOL using short form-8 (SF-8), Health Assessment Questionnaire (HAQ), visual analogue scale for patient's global subjective pain (pain VAS), for LBP (LBP VAS) were self-administered.

# Demographic data, clinical variables

age, sex, body mass index, onset age, disease duration

current medical status (use of corticosteroid, methotrexate, and biological agents)

laboratory data (serum level of C-reactive protein (CRP), matrix metalloproteinase-3 (MMP-3))

disease activity score for 28 joints based on CRP(DAS28)

history of joint surgery

# Radiological findings

On plain radiographs,

Typical lumbar lesions of RA

    spondylolisthesis [Meyerding grade  $\geq 1$ ], vertebral fractures

Parameters of spinopelvic alignment (in standing position)

    Cobb angle, sagittal vertical axis (SVA), lumbar lordosis (LL), pelvic tilt (PT), pelvic incidence (PI), PI minus LL (PI-LL)

Bone mineral density (BMD) was evaluated using dual X-ray absorptiometry

# Statistical analysis

Dependent variables were determined as physical component summary (PCS) score of SF-8, which were stratified according to the Japanese norm-based score (PCS = 49.8).

Unpaired t-test or chi square test were used to distinguish a poor HRQOL group (group P: PCS  $\leq$ 49.8) from a good HRQOL group (Group G: PCS >49.8).

Multiple stepwise regression analyses were performed to determine the factors influencing HRQOL.

## Results

Mean age: 64.7(29-93) years

Mean disease duration: 13.4 (1-57) years

# Univariate analysis

	<b>Group P (PCS ≤49.8)</b>	<b>Group G (PCS &gt;49.8)</b>	<b>P value</b>
<b>Age, mean (S.D.), years</b>	<b>71.7 (8.2)</b>	<b>66.9 (8.8)</b>	<b>&lt;0.001</b>
<b>Female, n (%)</b>	<b>108 (78.3)</b>	<b>750 (80.2)</b>	<b>0.649</b>
<b>BMI, mean (S.D.), kg/m<sup>2</sup></b>	<b>22.9 (4.3)</b>	<b>22.5 (3.7)</b>	<b>0.240</b>
<b>Onset age, mean (S.D.), years</b>	<b>54.4 (11.4)</b>	<b>53.5 (12.7)</b>	<b>0.438</b>
<b>Disease duration, mean (S.D.), years</b>	<b>17.5 (11.0)</b>	<b>13.4 (10.5)</b>	<b>&lt;0.001</b>
<b>Surgical history, n (%)</b>	<b>69 (50.0)</b>	<b>286 (30.6)</b>	<b>&lt;0.001</b>
<b>CRP, mean (S.D.), mg/dl</b>	<b>0.72 (1.20)</b>	<b>0.40 (0.94)</b>	<b>&lt;0.001</b>
<b>MMP-3, mean (S.D.), ng/dl</b>	<b>154.4 (171.2)</b>	<b>80.8 (138.6)</b>	<b>&lt;0.001</b>
<b>HAQ, mean (S.D.), points</b>	<b>1.47 (0.84)</b>	<b>0.46 (0.53)</b>	<b>&lt;0.001</b>
<b>Pain VAS, mean (S.D.), points</b>	<b>61.4 (24.3)</b>	<b>27.3 (23.8)</b>	<b>&lt;0.001</b>
<b>LBP VAS, mean (S.D.), points</b>	<b>43.1 (33.4)</b>	<b>20.1 (25.0)</b>	<b>&lt;0.001</b>
<b>DAS28-CRP, mean (S.D.), points</b>	<b>2.7 (0.7)</b>	<b>2.1 (0.7)</b>	<b>&lt;0.001</b>

	<b>Group P (PCS ≤49.8)</b>	<b>Group G (PCS &gt;49.8)</b>	<b>P value</b>
<b>Corticosteroid use, n (%)</b>	<b>55 (39.9)</b>	<b>191 (20.4)</b>	<b>&lt;0.001</b>
<b>MTX use, n (%)</b>	<b>55 (39.9)</b>	<b>191 (20.4)</b>	<b>&lt;0.001</b>
<b>BIO use, n (%)</b>	<b>87 (63.0)</b>	<b>712 (76.1)</b>	<b>0.001</b>
<b>Vertebral fractures, n (%)</b>	<b>41 (29.7)</b>	<b>123 (13.2)</b>	<b>0.016</b>
<b>Spondylolisthesis, n (%)</b>	<b>44 (31.9)</b>	<b>205 (21.9)</b>	<b>0.013</b>
<b>Cobb angle, °</b>	<b>17.8 (10.3)</b>	<b>13.3 (7.4)</b>	<b>&lt;0.001</b>
<b>SVA (mm)</b>	<b>47.3 (58.3)</b>	<b>20.9 (44.5)</b>	<b>&lt;0.001</b>
<b>PT (°)</b>	<b>23.0 (13.4)</b>	<b>17.9 (9.5)</b>	<b>&lt;0.001</b>
<b>PI-LL (°)</b>	<b>15.1 (21.7)</b>	<b>5.9 (15.3)</b>	<b>&lt;0.001</b>
<b>BMD, mean (S.D.), g/cm<sup>2</sup></b>	<b>0.578 (0.130)</b>	<b>0.600 (0.122)</b>	<b>0.054</b>

Unpaired t-test or chi square test

# Multiple regression analysis, the factors influencing HRQOL

	<b>unstandardized coefficients</b>	<b>95%CI</b>	<b><math>\beta</math></b>	<b>P value</b>
<b>Age</b>	<b>0.046</b>	<b>0.010-0.082</b>	<b>0.060</b>	<b>0.012</b>
<b>DAS28-CRP</b>	<b>1.924</b>	<b>1.303-2.546</b>	<b>0.161</b>	<b>&lt;0.001</b>
<b>Pain-VAS</b>	<b>0.088</b>	<b>0.065-0.111</b>	<b>0.251</b>	<b>&lt;0.001</b>
<b>LBP-VAS</b>	<b>0.065</b>	<b>0.046-0.084</b>	<b>0.185</b>	<b>&lt;0.001</b>
<b>HAQ</b>	<b>3.979</b>	<b>3.131-4.827</b>	<b>0.286</b>	<b>&lt;0.001</b>

by multiple stepwise regression analysis  
Sex, disease duration, surgical history, CRP, MMP-3, use of corticosteroid, MTX, BIO, vertebral fractures, spondylolisthesis, Cobb angle, SVA, PT, PI-LL, and BMD were not significant

# HRQOL of RA patients with low back pain was decreased

- HRQOL might be influenced by pain of the body trunk as well as joint pain in patients with RA in this study
- LBP has a larger impact than knee pain on QOL in general population

Muraki S et al, Spine 2011

***LBP is more common in RA and may decrease the HRQOL more than other joint pain***

# LBP decreased HRQOL as well as HAQ, DAS-CRP, pain VAS

- Functional disability, higher disease activity, and subjective pain were the strongest determinants of lower QOL

Cho SK et al. Rheumatol Int 2013

***Pay more attention to LBP for improvement of  
HRQOL in patients with RA***

## Limitations

- Not evaluated other possible factors associated with HRQOL of RA,
  - ✓ Co-morbidity, weekly exercise
  - ✓ Psychological factors

## Conclusions

- HRQOL was influenced by LBP in patients with RA as well as age, disease activity, subjective pain, and functional disability.

### COI Disclosure

The presenting author has no financial COI to disclose concerning this presentation.