

Worse physical function at disease onset predicts a worse outcome in physical function, but not in meeting WHO physical activity recommendations, nine years later.

Karina Malm¹, Stefan Bergman¹, Maria Andersson¹, Ann Bremander^{1,2} and the BARFOT study group

¹R&D Center, Spenshult Rheumatology Hospital, 313 92 Oskarström, Sweden, ²Department of Exercise Physiology, Biomechanics and Health, School of Business and Engineering, Halmstad, Sweden,

Conclusion

- It is of importance to already at disease onset recognize patients with impaired function and higher pain levels who are in need of multidisciplinary treatments.
- It is also important to early in the disease recommend a healthy life style according to the WHOrec since function and being physically active are different entities.

Background

The long term disease impact on physical functioning in the most affected patients with RA is not well described. Impaired function and the inability to be physically active are associated features and it is well known that people with RA are less physically active compared with the general population.

Objective

To study predictive variables for a worse outcome in physical function and physical activity measures in a long time follow-up study.

Methods

Between 1992 and 2005 all patients with newly diagnosed RA according to criteria of the American College of Rheumatology were asked to participate in the BARFOT study, a collaboration between six Swedish rheumatology departments. In 2010 all patients (n = 2114) included in the study received a follow-up questionnaire 5-18 years after disease onset. Using logistic regression analyses, the dependent variables physical function (dichotomized by their mean value) were measured with the HAQ (scores 0 to 3, best to worst), the RAOS (Rheumatoid Arthritis Outcome Score) subscales ADL and sport/rec (0-100, worst to best) and meeting vs. not meeting WHO recommendations of physical activity (WHOrec) for a healthy life style (moderate intensity >150 min/week or higher intensity for at least 30 minutes 2-3 times/week). Possible predictive variables at baseline were function (HAQ and SOFI, Signals of Functional Impairment, 0-44, best to worse), disease activity (CRP, swollen and tender joints), pain (VAS 0-100, best to worst) and age. We also controlled for sex and disease duration in 2010.

Results

Questionnaire response was 72% (n=1525), mean (m) age 65 years (SD 14), mean follow-up time 9 years (SD 3.7) and 70% (n=1069) were women.

At inclusion the patients reported a disease duration of m 8 (SD 9) months, HAQ m 1.0 (SD 0.6), VAS pain m 46 (SD24), SOFI m 8.0 (SD6.0). Disease activity was CRP m 30.2 (SD 35.9), swollen joints m 10.2 (SD 5.7) and tender joints m 8.2 (SD 6.2).

In the 2010 survey, time from inclusion was m 9.4 (SD 3.8) years, the HAQ m 0.6 (SD 0.6), and VAS pain m 35.5 (SD 25.6) had decreased (p< 0.001). RAOS ADL was m 71,1 (SD 22.0) , RAOS sport/rec m 40.0 (SD 30.0) and 61% (N=894) met the WHOrec.

Worse scores in the HAQ, pain and SOFI at baseline increased the risk for worse physical function in the 2010 survey measured with the HAQ, the RAOS ADL scale and the RAOS sport/rec scale. Being a woman, higher age at inclusion and longer disease duration at follow-up also predicted a worse function in the HAQ and both RAOS subscales while none of the studied variables could predict who did/did not meet the WHOrec in 2010.



Table 1. Results of multiple logistic regression analysis with HAQ 2010 as dependent variable dichotomized by HAQ mean value (0.6). Odds Ratio (OR) over 1 represents a worse outcome.

Variables	HAQ			
	No	OR	95 % CI	P-value
Men	390	1		
Women	895	2.44	1.869 ; 3.236	<0.001
Age, yrs	1285	1.03	1.023 ; 1.042	<0.001
CRP	1285	1.00	0.999 ; 1.006	0.196
Swollen	1285	0.99	0.966 ; 1.014	0.409
Tender	1285	1.03	1.009 ; 1.054	0.006
Follow-up time, yrs	1285	1.07	1.028 ; 1.112	0.001
*Pain VAS (0-100)	1285	1.02	1.012 ; 1.024	<0.001
*HAQ (0-3)	1253	3.98	3.094 ; 5.129	<0.001
*SOFI (0-44)	948	1.09	1.065 ; 1.123	<0.001

Table 2. Results of multiple logistic regression analysis with RAOS ADL as dependent variable dichotomized by RAOS ADL mean value (71). Odds Ratio (OR) over 1 represents a worse outcome.

Variables	RAOS ADL			
	No	OR	95 % CI	P-value
Men	279	1		
Women	680	1.68	1.232 ; 2.283	0.001
Age, yrs	959	1.04	1.027 ; 1.049	<0.001
CRP	959	1.00	0.998 ; 1.005	0.484
Swollen	959	0.97	0.941 ; 0.995	0.020
Tender	959	1.03	1.004 ; 1.115	0.024
Follow-up time, yrs	959	1.07	1.021 ; 1.115	0.004
*Pain VAS(0-100)	959	1.02	1.013 ; 1.025	<0.001
*HAQ (0-3)	936	2.66	2.028 ; 3.480	<0.001
*SOFI (0-44)	708	1.10	1.070 ; 1.140	<0.001

*The variables were included separately in the multiple logistic regression analysis together with the other independent variables due to high correlation.

Table 3. Results of multiple logistic regression analysis with RAOS Sport/Recreation as dependent variable dichotomized by RAOS Sport/Recreation mean value (40). Odds Ratio (OR) over 1 represents a worse outcome.

Variables	RAOS Sport/ Recreation			
	No	OR	95 % CI	P-value
Men	283	1		
Women	676	2.16	1.585 ; 2.933	<0.001
Age, yrs	959	1.04	1.031 ; 1.053	<0.001
CRP	959	1.00	0.997 ; 1.004	0.682
Swollen	959	0.99	0.961 ; 1.015	0.385
Tender	959	1.03	0.999 ; 1.050	0.057
Follow-up time, yrs	959	1.07	1.028 ; 1.122	0.001
*Pain VAS (0-100)	959	1.02	1.009 ; 1.022	<0.001
*HAQ (0-3)	934	2.57	1.961 ; 3.373	<0.001
*SOFI (0-44)	707	1.12	1.080 ; 1.155	<0.001

Table 4. Results of multiple logistic regression analysis with meeting vs. not meeting the WHO recommendation for sufficient Physical Activity to sustain health as dependent variable Odds Ratio (OR) over 1 represents not meeting the WHO recommendations.

Variables	WHO recommendation Physical Activity			
	No	OR	95 % CI	P-value
Men	385	1		
Women	857	0.89	0.689 ; 1.144	0.357
Age, yrs	1242	1.01	1.000 ; 1.018	0.043
CRP	1242	1.00	0.999 ; 1.006	0.126
Swollen	1242	0.98	0.958 ; 1.004	0.096
Tender	1242	1.01	0.986 ; 1.029	0.480
Follow-up time, yrs	1242	1.02	0.983 ; 1.059	0.293
*Pain VAS(0-100)	1242	1.00	0.993 ; 1.003	0.467
*HAQ (0-3)	1209	1.07	0.864 ; 1.336	0.520
*SOFI (0-44)	912	1.02	0.992 ; 1.042	0.183

R & D Center Spenshult
SE-313 92 Oskarström
Sweden
Karina.malm@spenshult.se

