Factors associated with Pediatric Onset Multiple Sclerosis slowed gait, does mood matter?

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Objective

- To evaluate associations between disease duration, functional outcomes (FO), and health related quality of life (HRQOL) among Pediatric Onset Multiple Sclerosis (POMS) patients, and to identify factors potentially associated with longer T25FW in POMS.

Background

- POMS has been shown to lead to significant disability at a young age.
- HRQOL measures in POMS have been shown to be associated with disease duration in small series but require validation in longitudinal data sets.
- Walking performance contributes greatly to HRQoL.
- Depression can worsen quality of life measures in adult MS, it is not known if depression contributes to HRQOL and or FO in POMS
- We aim to identify factors that contribute to FO and therefore may reduce disease progression.

- Multiple Sclerosis Journal Vol 18, Issue 6, pp. 853 - 861 First published date: November-22-2011
- 2015 Dec;79(6):550-7. doi: 10.1016/j.jpsychores.2015.08.007. Epub 2015 Sep 1.
- Rintala, A., Häkkinen, A. & Paltamaa, J. Qual Life Res (2016) 25: 3119. doi:10.1007/s11136-016-1347-x

Patient reported outcome (PRO)

- PRO used to measure quality of life as they are based entirely on patient self-perception.

Health related quality of life (HRQoL), Patient reported outcome (PRO)

- MSPS
- MSPS combined
- MSPS fatigue
- PHQ9, Patient Health Questionnaire, range 0-27, up to 3 points per question
- EQ-5D- generic, preference based, self reported
  - 5 domains: mobility, self care, usual activities, pain, anxiety or depression
  - No , moderate or severe problems
  - Classified into one of 243 unique health state profiles
  - Cardinal scale anchored at 1 (perfect health), 0 (absence of life/dead), less than 0(worse than dead), 0.594

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Methods

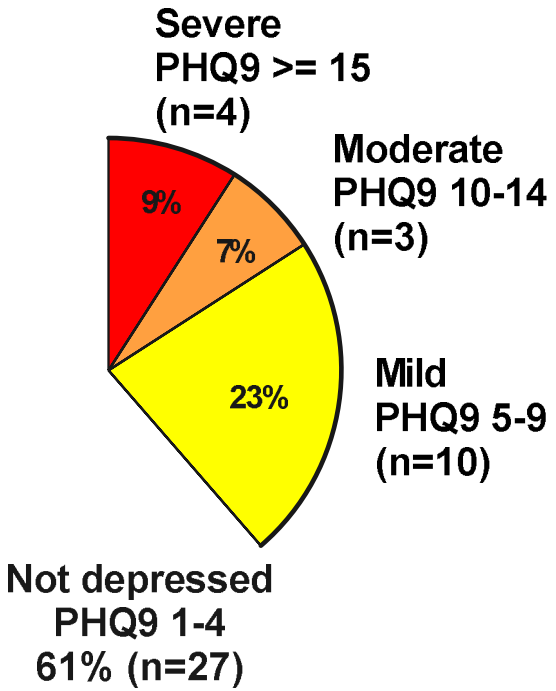
- POMS patient charts were reviewed for; demographics, clinical characteristics, HRQOL and FO.
- Both numerical and categorical forms of T25FW were examined for its associations with HRQOL and FO.
- Associations between numerical form of T25FW and HRQOL were evaluated using Spearman correlation coefficient.
- Patients' demographics, FO and HRQOL were compared between nonslow and slow gait (top quartile, 7 or more seconds) using Wilcoxn test for numerical variables and Chi square or Fisher exact test for categorical variables.

Results

- A total of 44 POMS patients were evaluated.
- Patient characteristics and depression status are summarized next slide.
- 39% patients were depressed
- Slowed gait was associated with: older age, longer disease duration, higher MSPS and PHQ9.

Patient Characteristics and results

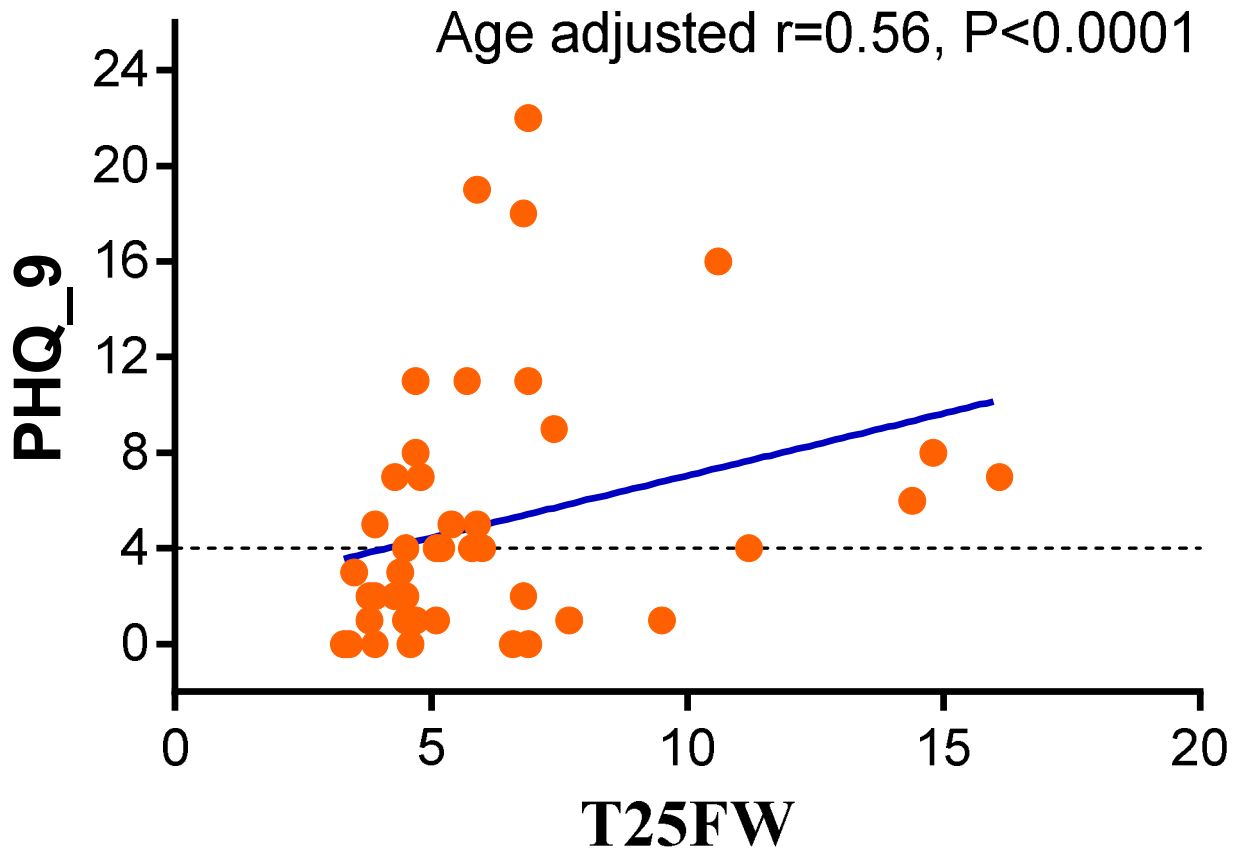
Factor*	T25FW (Seconds)		p-value
	< 7 (N=36)	>= 7 (Slow) (N=8)	
Demographics			
Sex, Female	25 (69.4)	5 (62.5)	0.70
Race, White	27 (79.4)	6 (75.0)	0.78
Current age	21.0 (17.5,24.0)	33.0 (24.0,43.0)	0.01
MS history			
Age at Onset	15.0 (13.0,16.0)	15.0 (14.0,17.0)	0.70
Course, RRMS	22 (61.1)	4 (50.0)	0.70
MS Duration	5.9 (2.8,11.1)	17.5 (8.4,27.1)	0.02
MSPS total	4.5 (2.0,9.5)	9.0 (5.5,20.5)	0.03
Depression Status			
PHQ-9			
Median (IQR)	3.0 (1.00,6.0)	6.5 (2.5,8.5)	0.18
Mild or severe (> 4)	12 (33.3)	5 (62.5)	0.13
MSPS depression			
Median (IQR)	0.50 (0, 1)	0.50 (0, 1)	0.83
Mild or severe (>1)	28 (77.8)	7 (87.5)	0.99
EQ-5D (N=21)	1.00 (0.84,1.00)	0.84 (0.82,0.92)	0.30



Comparison between two Gait groups

- Patients with T25FW time ≥ 7 seconds were grouped to *slow gait group.*
- *Older age (Median 21 vs. 33 years), longer disease duration (5.9 vs. 17.5* years) and higher MSPS combined score (9.0 vs. 4.5) were found in slower gait group.
- Median PHQ-9 was higher in slow gait group (6.5 vs 3.0), and more patients in slow gait group had PHQ-9 > 4 (Depression 62.5% vs. 33.3%).

Association between T25FW and PHQ9



Association between T25FW and other psychological factors

	Unadjusted		Age Adjusted*	
Factor	R (95% CI)	P value	R (95% CI)	P value
PHQ-9	0.46 (0.19,0.74)	0.002	0.56 (0.30,0.82)	<0.0001
MSPS depression	0.16 (-0.15,0.47)	0.29	0.14 (-0.17,0.45)	0.37
EQ-5D	-0.40 (-0.84,0.04)	0.08	-0.39 (-0.84,0.05)	0.09

Conclusions

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- Nearly 40% POMS patients were depressed, this was associated with slowed gait.
- HRQOL scores, PHQ9 and the EQ-5D correlated with timed gait
- Longer disease duration and older age were seen with slowed gait
- HRQOL including MSPS combined and MSPS fatigue was associated with clinical performance measurement among POMS patients.
- Age of onset, gender, race and disease course were not predictive of a slower gait, we need better predictors of long term disability in POMS.
- Psychological intervention may help physical performance among POMS patients.