Is there a relationship between saccadic eye movements and cognitive function in multiple sclerosis?

J.A. Nij Bijvank¹,², A. Eijlers³, L.J. Balk², H.S. Tan¹, B.M.J Uitdehaag², A. Petzold¹,²,4, L.J. van Rijn¹

¹Department of ophthalmology, VU University Medical Center, Amsterdam, The Netherlands ²Neurology, Amsterdam neuroscience, VUmc MS Center Amsterdam, The Netherlands ³Anatomy & Neurosciences, Amsterdam neuroscience, VU University Medical Center, Amsterdam, The Netherlands ⁴Moorfields Eye Hospital, London, United Kingdom

E-mail: j.nijbijvank@vumc.nl

Background

- Multiple sclerosis
- Eye movement disorders 36-76% of patients
- Cognitive impairment 40-65% of patients
- Extensive cortical network involved in eye movements
- Use as model for cognitive functioning?

Methods

- Infrared oculography, standardized protocol
- The Amsterdam DEMoNS protocol
  - Demonstrating Eye Movement Networks with Saccades
  - Pro-saccades
  - Anti-saccades
  - Parameters
    - Latency (L)
    - Gain (G)
    - Peak velocity (PV)
    - Nr. of errors
    - Latency correction (LC)
    - Gain final eye position (FEP)

Results

- Healthy controls
  - n=26
  - Cognitive preserved
  - n=23
  - Mildly cognitively impaired
  - n=17
  - Cognitively impaired
  - n=11
- MS patients
  - n=52
  - Cognitive preserved
  - n=26
  - Mildly cognitively impaired
  - n=17
  - Cognitively impaired
  - n=11

Conclusion

- Cognitive function is related to peak velocity and gain in pro-saccade and anti-saccade tasks
- Consider precise quantitative saccadic testing as a potential surrogate outcome for cognitive function in longitudinal studies and treatment trials

References