**Employment outcomes in paediatric onset MS**

A. Stahmann¹, P. Flachenecker², F. Fneish¹, C. Kleinschnitz³, D. Pöhla⁴,⁵, O. Rienhoff⁶, U.K. Zettl⁷, J. Haas⁸,⁹

1. MS Forschungs- und Projektentwicklungs-gGmbH, Hannover
2. Neurological Rehabilitation Center Quellenhof, Bad Wildbad
3. Department of Neurology, University Hospital Essen
4. German Red Cross - Kamillus-Clinic, Asbach
5. German MS Society, Hannover
6. University Medical Center Göttingen, Georg-August-University Göttingen
7. Department of Neurology, Neuroimmunological Section, University of Rostock
8. MS-Center, Jewish Hospital Berlin

1. **Background**

Paediatric onset MS, defined by first symptom before the age of 18, often comes with high levels of disease activity. Life-threatening disease courses and so called break through MS are more common than in adult onset MS. Often relapses remit completely, whereas neuropsychological deficits are more relevant compared to young adults.

2. **Aims and Hypotheses:**

This study aims to provide quantitative analyses on long-term employment outcomes and sociodemographic factors for paediatric onset MS in Germany.

3. **Methods and Material:**

- Data [extract date: 13.08.2019] of 20,672 people with Multiple Sclerosis (PwMS) from the German MS-Register were analysed.
- Group comparisons were done using Fisher’s exact test (F) for categorical data, t-test (t) for metric outcomes and Wilcoxon (W) for ordinal outcomes considering p-values p ≤0.05 statistically significant. No adjustments for multiple comparisons were made due to the exploratory nature of the study.
- Matched controls were obtained by optimal matching on gender and year of birth achieved an improved comparability of cohorts.

4. **Results:**

<table>
<thead>
<tr>
<th></th>
<th>Females (%)</th>
<th>Δ-Age (last visit)</th>
<th>Δ-Age at onset</th>
<th>Δ-Time to diagnosis (since 2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paediatric onset MS (n=997)</td>
<td>78.8%</td>
<td>36.5 (±12.5)</td>
<td>15.8 (±22.0)</td>
<td>4.0 (median: 0.6)</td>
</tr>
<tr>
<td>Adult onset MS (987 matched cases)</td>
<td>78.8%</td>
<td>36.8 (±12.3)</td>
<td>25.0 (±26.1)</td>
<td>1.1 (median: 0.1)</td>
</tr>
<tr>
<td>Adult onset MS (n=19,671)</td>
<td>71.4%</td>
<td>48.1 (±11.8)</td>
<td>34.5 (±10.3)</td>
<td>1.8 (median: 0.2)</td>
</tr>
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</table>

Table 1: Demographics (%), mean, and standard deviations) in years.

5. **Conclusions:**

- Paediatric onsets are rare (2.8%), underreporting might be possible due to the fact that paediatric neurologists take care until the age of 18 years in Germany, and until now do not report to the MS-Register.
- Our analysis showed that patients with paediatric onset MS are significantly more often not able to finish a school degree, nor to work.
- While their EDSS does not show major impairment (after age 45) for most of them even after 25+ years disease duration their deficits are more neuropsychological which is reflected in the reduced numbers of finished school and job trainings.
- This may be due to the fact that MS affected a developing brain and highly effective therapy may be helpful to prevent these consequences.
- Male poMS seem to have much higher difficulties to find life partners.

**Disclosure – Declaration of Interest**

P378 Disclosure

PF has received speaking fees and honoraria for advisory boards from Almirall, Bayer, Biogen, Genzyme, Merck-Serono, Novartis, Roche and Teva. He has participated in pharmaceutical company sponsored trials by Almirall, Biogen Idec and Novartis. Novartis resulted in a conflict of interest.

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