Interferon β-1a s.c. tiw treatment response and disability progression

E. Järvinen1, A. Murtonen2, M.L. Sumelähti2
1Merck Finland, Espoo, Finland and University of Helsinki, Department of Medicine, Helsinki, Finland; 2University of Tampere, Faculty of Medicine and Life Sciences, Tampere, Finland

INTRODUCTION

- Immunomodulatory treatments in multiple sclerosis (MS) aim to reduce disease activity and prevent progression.
- Platform-injectable therapies are usually well tolerated, and serious adverse effects are rare.8
- Due to efficacy and tolerability issues, the optimal treatment success in MS remains challenging.2
- Information on the long-term disability progression and adherence to treatment in real-life is needed to help the management of MS.

OBJECTIVES

- To assess factors that relate to treatment adherence and disability progression among relapsing MS patients with interferon β-1a s.c tiw as the first treatment, in a retrospective long-term real-life cohort.

METHODS

Study Design

- Confirmed relapsing MS patients diagnosed during 1981-2010 in Western Finland were scrutinized to fulfill inclusion criteria for the first treatment with interferon β-1 a s.c tiw 22µg or 44µg, information on EDSS from treatment start and causes of discontinuation from 1996 to 2010.

Statistical Analysis

- Kaplan-Meier (KM) was applied to study median time to discontinuation by causes categorized in groups: side effects, disease activation, pregnancy plan and antibody formation (MXA titer).
- Longitudinal linear regression models were applied to assess risk of disability progression during the treatment period.
- Odd’s ratios (OR) with 95% confidence intervals (95% CI) were calculated for gender, age at diagnosis, treatment delay (time from diagnosis to treatment start), dose of interferon β-1a s.c tiw, baseline EDSS and EDSS change in one year.

RESULTS

<table>
<thead>
<tr>
<th>Table 1. Characteristics of the study population</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Men</td>
</tr>
<tr>
<td>Women</td>
</tr>
<tr>
<td>Interferon β-1a s.c tiw 22µg</td>
</tr>
<tr>
<td>Interferon β-1a s.c tiw 44µg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at diagnosis, years</td>
<td>33.6</td>
<td>32.0</td>
</tr>
<tr>
<td>Age at treatment start, years</td>
<td>36.4</td>
<td>36.0</td>
</tr>
<tr>
<td>Time from diagnosis to treatment, years</td>
<td>2.8</td>
<td>1.0</td>
</tr>
<tr>
<td>EDSS at treatment start</td>
<td>1.7</td>
<td>1.0</td>
</tr>
<tr>
<td>Duration of treatment period, years</td>
<td>2.9</td>
<td>1.9</td>
</tr>
</tbody>
</table>

- A total of 293 cases were included. At treatment start EDSS was 3.0 or less in 253 cases (86%). Mean duration of treatment episode during the 14-year follow-up was 2.9 years.
- Disease activation in 29.0% (n=59) and side effects 25.4% (n=71) were the main causes of discontinuation in 204 cases (70.0 %).
- Median survival time to discontinuation was one year in side-effect group (flu like reactions, laboratory values or skin problems) and two years in group where disease activation and pregnancy plans were cause of discontinuation (Figure 1).

CONCLUSIONS

- No disability at treatment start, (EDSS 0-1.0) and young age at diagnosis were related to a lower disability progression risk
- Side effects, pregnancy plans, and disease activation affected treatment adherence
- The results point at the importance of active monitoring for disability status
- Regular follow-up at treatment phase and actions to diminish side-effects are needed to reach the goal of efficacious and tolerated long-term treatment with interferon β-1a s.c tiw

REFERENCES


ACKNOWLEDGEMENTS

This study was sponsored by Merck Finland, Helsinki, Finland*. The authors would like to thank Pasi Korhonen (StatFinn) and Melina Tervomaa (StatFinn) for help in statistical analysis and Pedro Testi (Merck Research Clinical Operations) for coordination of the study.

*An affiliate of Merck KGaA, Darmstadt, Germany.

DISCLOSURES

E.J. is an employee of Merck Finland, an affiliate of Merck KGaA, Darmstadt, Germany.

Interferon β-1a s.c tiw (1.0, 0.4-2.3) (Figure 4.)

Figure 4. Longitudinal linear regression model. Prognostic clinical factors for risk of disability progression.

Figure 1. Time from interferon β-1a s.c tiw start to treatment discontinuation by cause

Figure 2. Time to discontinuation

Figure 3. Risk of disability progression: yearly EDSS changes

Figure 4. Interferon β-1a and disability progression

Figure 5. Longitudinal linear regression model. Prognostic clinical factors for risk of disability progression.