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

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Objective: 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: Confirmed relapsing MS patients diagnosed during 1981-2010 in Western Finland were scrutinized to fulfill inclusion criteria for the first treatment with interferon β-1a s.c tiw 22µg or 44µg, information on EDSS from treatment start (baseline) and causes of discontinuation from 1996 to 2010. Kaplan-Meier was applied to study median time to discontinuation by causes categorized in groups: disease activation, side effects, pregnancy plan and 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: A total of 293 cases were included. Mean duration of treatment episode during the 14 years follow-up was 3.07 years. Disease activation in 29% (n 59) and side effects 26.4% (n 54) were main causes of discontinuation in 204 cases (70%). Median time to discontinuation showed that during the first year causes related to any side-effect (flu like reactions, laboratory values or skin problems), and median of two years to disease activation and pregnancy plans. In longitudinal analysis low baseline EDSS (0-1) as compared to EDSS 3.0 or higher showed statistically significant lower risk (OR 0.25,95% CI 0.1-0.6) for disease progression. An increased risk related to one year increase vs. no increase in EDSS during the treatment phase (1.12, 1.08-1.3). A 10-year difference of age at diagnosis was a significant risk factor (1.4, 1.01-1.9). No increased risk was shown for gender (0.67, 0.4-1.15), for yearly delay to treatment start from diagnosis (1.05, 0.99-1.11), nor for initial dose of interferon β-1a s.c tiw (1.0,0.44-2.3).

Conclusions: Side effects, pregnancy plans, and disease activation affected treatment adherence. No serious adverse events were observed up to the end of follow-up. Low disability state before treatment start and age at diagnosis was related to lower risk of disability progression in patients whose first treatment was interferon β-1a s.c tiw. The results here point at the importance of active monitoring for disability status already after MS onset. 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. These actions, when included in treatment protocols and conveyed in patient education, may increase optimal treatment adherence.