Comparative effectiveness of dimethyl fumarate, teriflunomide, interferon-beta and glatiramer acetate on newly diagnosed patients: a propensity score-matched analysis from a multicenter Italian group

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Objective: To compare effectiveness of dimethyl fumarate (DMF) and teriflunomide (TERI) vs injectables first-line therapies as interferon-beta (IFN) and glatiramer acetate (GA) on time to first relapse (TTFR) in newly diagnosed patients.
Background: New MS oral drugs as DMF and TERI have been recently approved as first line therapies for RRMS. Real-life comparisons between these drugs and injectable first line therapies, aimed to assess the relative effectiveness, are becoming possible as new data accumulate.
Methods: This analysis included only newly diagnosed RRMS patients (2010-2016) followed in 24 Italian centres and is focused on their first treatment. Patients who received TERI, DMF, IFN or GA as their first therapy were included. Propensity score (PS) matching (1:1) was used to match patients treated with DMF and TERI to comparable patients treated with IFN and GA. As a control, a matched comparison was also run between IFN and GA. PS matching was based on baseline characteristics as age, year and EDSS at diagnosis, gender, disease duration since first symptom, treatment delay, relapse rate in previous year, active and spinal cord MRI lesions. TTFR was analysed using a Kaplan-Meier approach and a stratified Cox model accounting for PS matched pairs.
Results: The database included 3033 newly diagnosed patients; of these 1525 received IFN, 543 GA, 313 DMF and 108 TERI as their first therapy. The remaining 544 received other drugs. Among patients on DMF, it was possible to find 221 and 191 matched pairs of patients treated with IFN and GA. Patients treated with DMF had a lower risk of relapse as compared to patients on IFN (HR=0.58; 95% CI:0.37-0.93; p=0.025) while the difference was not significant with patients on GA (HR = 0.77; 95% CI: 0.40-1.51; p=0.45). Among patients on TERI, 82 were matched to patients on IFN and 96 to patients on GA. No significant difference on TTFR was observed between TERI and IFN (HR=0.75; 95% CI:0.35-1.60; p=0.46) nor between TERI and GA (HR=0.82; 95% CI: 0.38-1.77; p=0.61). No difference was observed between IFN and GA (HR = 0.90; 95% CI: 0.69-1.17; p=0.42).
Conclusions: In newly diagnosed patients, DMF showed a significant delay in TTFR as compared to IFN. Larger cohort of patients in DMF and TERI are needed to confirm these results and reach the power to detect smaller differences between oral and injectable drugs in the capacity of oral drugs to delay relapse appearance in RRMS naïve patients at their first therapy.
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