

Comparative effectiveness of dimethyl fumarate in Multiple Sclerosis

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Abstract

Objectives: To assess the effectiveness of dimethyl fumarate (DMF) on annual rate of relapse (ARR) and disability progression in multiple sclerosis (MS) compared to injectable immunomodulators (IMM), teriflunomide (TERI) and fingolimob (FTY), in real life setting. **Methods:** A population-based cohort study was conducted using data of the French nationwide claims database, SNDS. All patients initiating IMM, TERI, FTY or DMF between July 1, 2015 and December 12, 2017, with 4.5 years of database history and 1 to 3.5 years of follow-up were included in this study. DMF patients were 1:1 matched to IMM, TERI or FTY using a high dimensional Propensity Score. Negative binomial regression and a logistic regression models were used to estimate the relative risk ($RR \pm [95\% \text{ CI}]$) of ARR and the Odds Ratio ($OR \pm [95\% \text{ CI}]$) of disability progression, respectively. **Results:** Overall, 9 304 subjects were identified: 29.0% initiated DMF, 33.2% TERI, 5.6% FTY and 32.2% an IMM. The matched cohorts consisted of 1779 DMF- IMM, patients, 1679 DMF-TERI patients, and 376 DMF-FTY patients. DMF significantly reduced ARR compared to IMM ($RR \text{ } 0.72 [0.61 - 0.86]$) and TERI ($0.81 [0.68 - 0.96]$) and did not show any significant difference when compared with FTY. The risk of the progression of MS specific disability was not significantly different for any matched cohorts. **Interpretation:** DMF is associated with lower risk of relapse for patients with RRMS than other first-line RRMS agents (TERI and IIM).

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