Background: Adherence to disease-modifying therapies (DMTs) for relapsing-remitting multiple sclerosis (MS) is key for its clinical management. Some patients experience inadequate response or tolerance problems with first-line DMTs. Consistent use of second-line DMTs is therefore important for continuing disease management. Objectives: Compare persistence and adherence on second-line MS DMTs intramuscular (IM) interferon beta-1a (IFNβ-1a), subcutaneous (SC) IFNβ-1a, interferon beta-1b (IFNβ-1b), glatiramer acetate (GA), and natalizumab. Methods: Data were retrospective medical and pharmacy claims for adult commercial health plan enrollees with MS starting second-line DMTs from 1/1/2000 to 9/30/2008. Second-line DMTs were the second observed therapies and included IM IFNβ-1a, SC IFNβ-1a, GA, IFNβ-1b, or natalizumab. Second-line DMT initiation was the index date. Patients were observed for 3 to 36 months post-index and 3 months pre-index. Medication possession ratio (MPR) was the adherence measure: \([\text{days of DMT}/\text{days until earlier of switch or end of post-index}]\); “adherence” was an MPR \(\geq 0.80\). Persistence was time until the earlier of \(\geq 60\)-day therapy gap or last DMT claim. Adherence and persistence were modeled with logistic and Cox proportional hazards regressions, respectively, controlling for DMT (reference: natalizumab), age, gender, and pre-index Charlson comorbidity score, MS-related hospitalization, and MS-related emergency visit. Results: The study sample was 3071 patients: 429 (14.0%) IM IFNβ-1a, 415 (13.5%) IFNβ-1b, 1067 (34.7%) GA, 872 (28.4%) SC IFNβ-1a, 288 (9.4%) natalizumab. Patients were 40.9 (±9.7) years old, on average (±SD), and 79.7% female. Regression results showed that natalizumab patients were significantly more likely to be adherent and persistent: odds ratios (95% confidence intervals) were 0.54 (0.39-0.76) for IM IFNβ-1a, 0.43 (0.31-0.59) for IFNβ-1b, 0.41 (0.30-0.55) for GA, and 0.53 (0.39-0.72) for SC IFNβ-1a. Patients on IFNβ-1b, GA, and SC IFNβ-1a were significantly more likely to stop second-line DMT than were natalizumab patients. Hazard ratios were 1.28 (1.00-1.63) for IFNβ-1b, 1.27 (1.02-1.58) for GA, and 1.25 (1.00-1.56) for SC IFNβ-1a. Conclusions: Patients on second-line natalizumab were more likely to be adherent and tended to have longer persistence compared with those on other DMTs.

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