PERSISTENCE TO DISEASE-MODIFYING DRUGS FOR MULTIPLE SCLEROSIS

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BACKGROUND / OBJECTIVES

Persistence to therapy is fundamental to achieve disease management goals. Due to the nature of chronic treatment in multiple sclerosis and treatment option, identifying nonpersistence is fundamental in order to develop strategies to optimize disease-modifying therapies utilization [1]. Hospital pharmacists' intervention is fundamental to patients' persistence on disease-modifying drugs (DMD) and hence to reduce relapses and slow disease progression.

This study aimed to assess persistence to multiple sclerosis therapy and identify potential impact of oral vs non-oral drugs to persistence.

METHODS

This was a retrospective cohort study, based on hospital drug claims for multiple sclerosis.

Patients with at least one claim for interferon, fingolimod, dimethyl fumarate, glatiramer acetate, natalizumab or teriflunomide, were eligible.

As persistence is defined as the duration of time from initiation to discontinuation of therapy [2], only patients who started a new therapy were eligible. Therefore, eligible population comprised either patients identified as naïve or switchers, between 2012 and 2019, defined as:

- **Naïve**: patient without any drug claim for multiple sclerosis in the previous 365 days;
- **Switcher**: patient who switched to other study drugs anytime during the study period, from 2012 to 2019.

The main outcome was persistence, defined as time from initiation to discontinuation of a given DMD, which was considered as a gap in the therapy when a subsequent claim for the same drug occurred >90 days after the end of the previous claim.

Statistical analysis included the estimation of the proportion of persistent patients at 6 and 12 months. Time to event analysis was performed with the Kaplan-Meier estimator and semi-parametric cox-proportional hazard regression model.

RESULTS

A total of 126 patients were included with a mean age of 43.7 (SD=10.1) (Table 1).

Overall, the majority of patients (52.4%) were under treatment with oral drugs (fingolimod: 23.8%; teriflunomide: 18.3%; dimethyl fumarate 10.3%) compared to 47.6% of patients were under treatment with non-oral drugs (interferon: 23.0%; glatiramer acetate: 18.3%; natalizumab: 6.3%) (Table 1).

Table 1 Patient characteristics

Patient characteristics	All patients (n=126)
Age (years), mean (SD)	43.7 (10.1)
Treatment, n (%)	
Fingolimod	30 (23.8)
Interferon	29 (23.0)
Glatiramer acetate	23 (18.3)
Teriflunomide	23 (18.3)
Dimethyl fumarate	13 (10.3)
Natalizumab	8 (6.3)

REFERENCES [1] Melesse DY, Marrie RA, Blanchard JF, Yu BN, Evans C. Persistence to disease-modifying therapies for multiple sclerosis in a Canadian cohort. Patient preference and adherence. 2017;11:1093; [2] Cramer JA, Roy A, Burrell A, Fairchild CJ, Fuldeore MJ, Ollendorf DA, Wong PK. Medication compliance and persistence: terminology and definitions. Value in health. 2008 Jan;11(1):44-7.

RESULTS

For the overall sample, there were a total of 28 patients (22.2%) who discontinued therapy, of which 26 patients (20.6%) were under treatment with non-oral therapy and two patients (1.6%) with oral drugs. Nonetheless the median time to discontinuation was not reached (Figure 1).

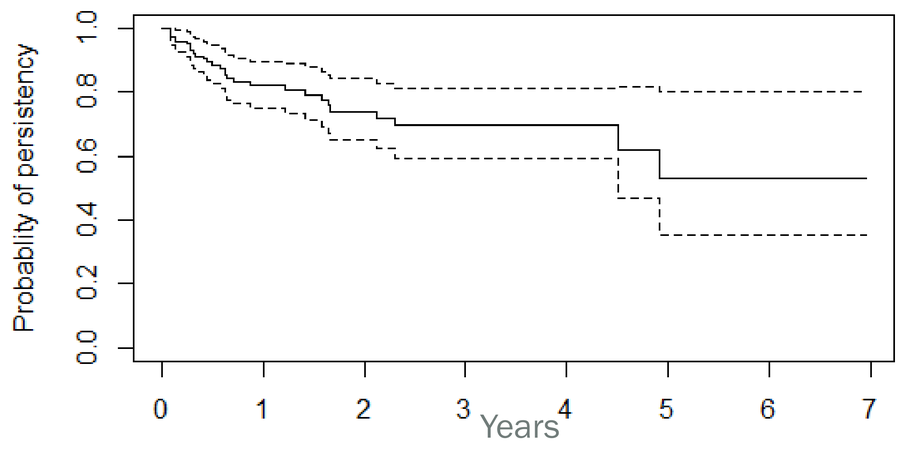

Figure 1 Overall probability of persistency

Only patients under non-oral treatment reached median time to discontinuation at 2.1 months (IC95%: 1.2-not reached). This probability was significantly different between oral and non-oral drugs (log-rank test p<0.0001).

The probability of persistence to non-oral DMD decreased over time, 77.9% (IC95%: 67.5% to 89.8%) at 6-month to 64.8% (IC95%: 52.8% to 79.6%) at 12 months, after treatment initiation. While for oral drugs the probability of persistence was maintained, as no patients discontinued after 6 months of treatment (98.4%; IC95%: 95.3% to 100.0%) (Figure 2).

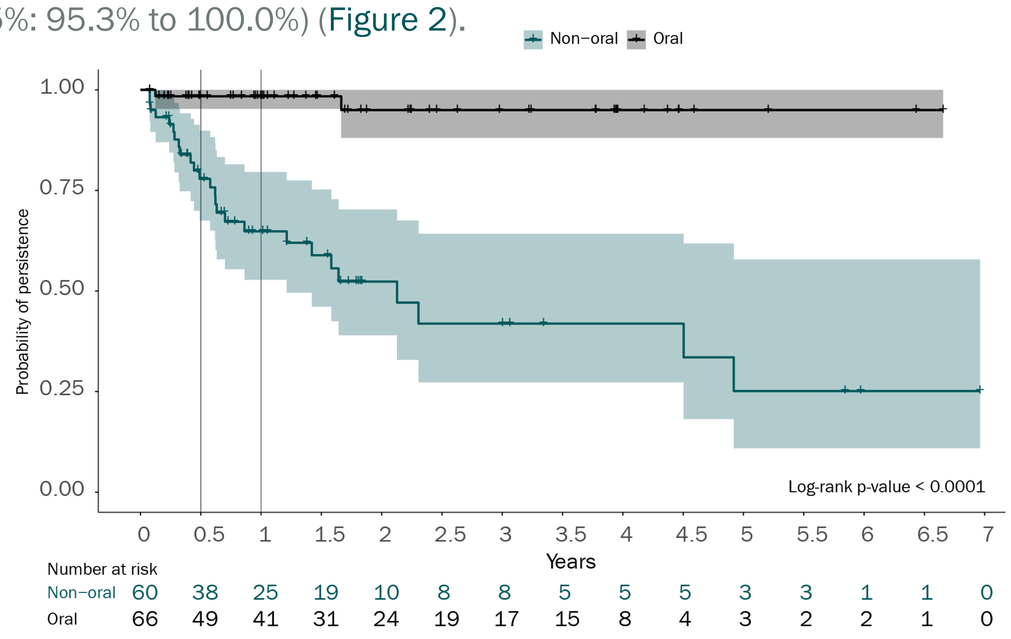

Figure 2 Probability of persistence for oral vs non-oral drugs

After adjusting for age, the risk of discontinuing treatment was 18.0 times higher for patients under treatment with non-oral DMD when compared with oral DMD (HR=18.0: IC95% 4.2 to 76.9) (Table 2).

Table 2 Risk of discontinuation

	Hazard ratio	Lower IC95%	Lower IC95%
Age	0.992	0.956	1.030
Non-oral treatment (*versus* oral)	17.964	4.245	76.020

CONCLUSION

This retrospective study shower a higher persistence to oral drugs, namely, fingolimod, teriflunomide and dimethyl fumarate, compared to non-oral drugs which included, interferon, glatiramer acetate and natalizumab. Time to discontinuation is an important parameter, within available option, to decision making when a treatment path is being considered for any patients.

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