# Switching disease-modifying therapy in Multiple Sclerosis: escalation therapy has not advantage on switching among same line drugs

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**Introduction:** New and potent DMTs for relapsing-remitting MS has increased the desire for therapeutic success and shifted the treatment goals from 'reducing the relapse rate' to 'achieving an absence of clinically relevant disease activity'. The aim of our study is to compare the effect of switching to another first-line therapy (lateral switch) or to a second-line therapy (escalation switch) on clinical and radiological disease activity outcomes in patients with relapsing-remitting Multiple Sclerosis.

**Materials and Methods:** A retrospective analysis of collected data at MS Center of Catania, University of Catania, was performed. PwRRMS who underwent a therapeutic switch for failure reason were assigned to the lateral (group A) or escalation (group B) switches. Exclusion criteria were: less than two years of follow-up, other immune-related disease, and no serial clinical-radiological evaluation. Demographic, clinical (relapses, EDSS) and radiologic (number of brain/spine T2 lesions, T1-gadolinium lesions) measures were collected. Primary outcome was the proportion of pwRRMS free from disease activity over 2 years from the switch. "No evidence of disease activity" was defined as no activity on clinical measures (no relapses and no sustained disability progression) and radiological measures (no new T2-lesions on brain/spinal MRI and no gadolinium-enhancing lesions). Secondary outcome was the proportion of pwRRMS who had a relapse in the follow-up and the time to reach the new relapse from the switch.

**Table 1** Demographic and clinical characteristics

| | A | B | p-Value |
|---|---|---|---|
| N. | 48 | 43 | |
| AGE | 44,5±12,8 | 41,5±10 | |
| AGE AT ONSET | 34,9±11,8 | 31,4±9,7 | |
| MONTHS FROM ONSET | 10,4±4,2 | 15,4±11,7 | |
| FIRST TREATMENT (MONTHS) | 54,3±39,7 | 57,2±48,9 | |
| RELAPSES 1 yb SWITCH | 0,7±0,4 | 0,8±0,4 | |
| n.T2 MRI BRAIN 1Yb SWITCH | 27,3±31,5 | 44,2±32 | 0,048 |
| n.T2 MRI SPINE RM 1yb SWITCH | 3,6±8,4 | 2,9±2,9 | |
| T1 GD+ MRI BRAIN/SPINE 1yb SWITCH | 0,3±0,7 | 1,1±2,4 | |
| T1 BRAIN RM AT SWITCH | 7,9±12,4 | 17±23,6 | 0,032 |
| T2 BRAIN RM AT SWITCH | 29±30 | 50,9±44,2 | 0,08 |
| T2 SPINE RM AT SWITCH | 1,7±1,6 | 2,9±2,7 | 0,018 |
| GD+ BRAIN /SPINE AT SWITCH | 0,6±1 | 0,6±1,4 | |
| EDSS AT SWITCH | 2,5±1,4 | 2,9±1,4 | |

° =t-test;
1yb=oneyearbefore;N.=number

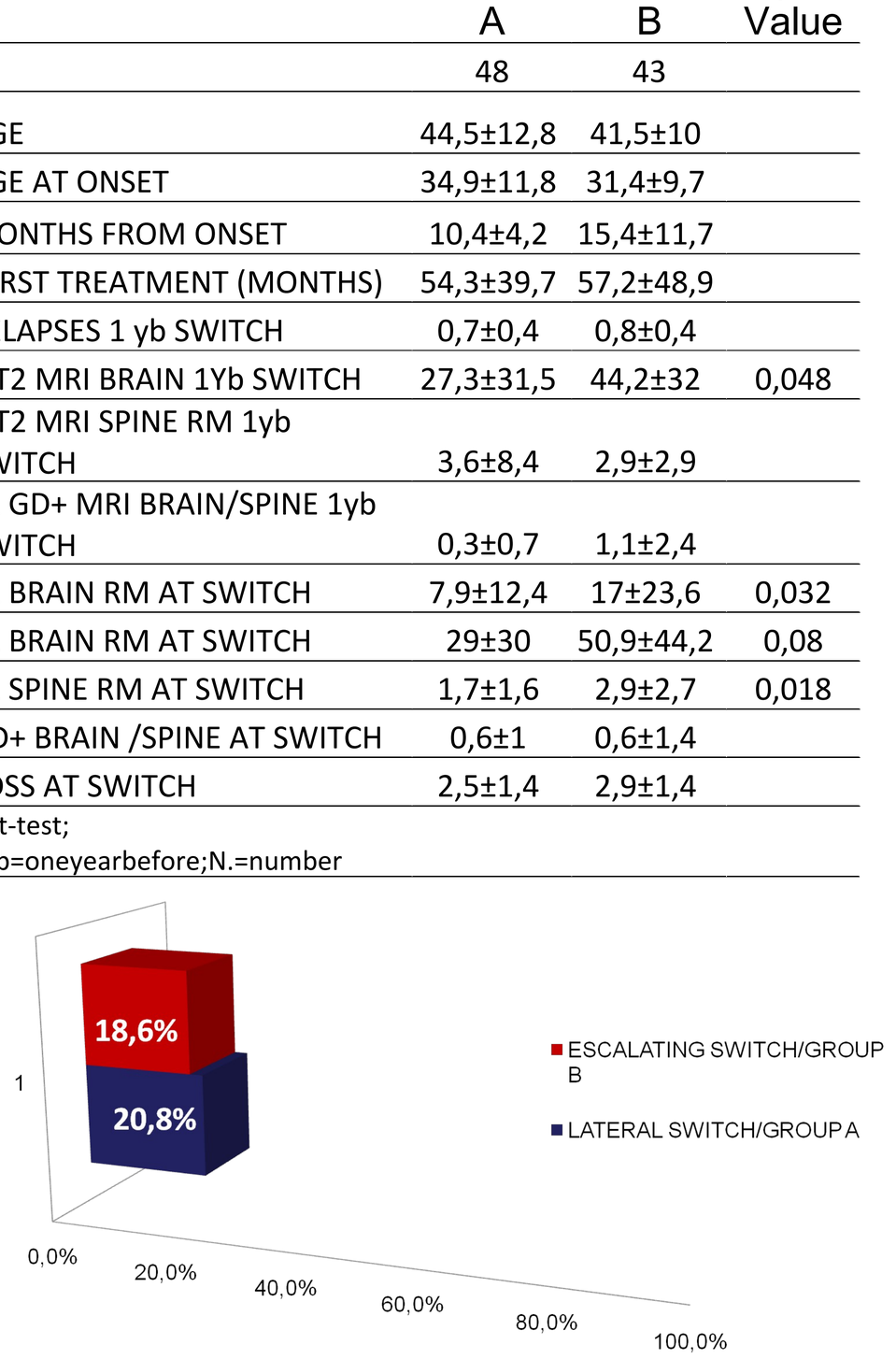
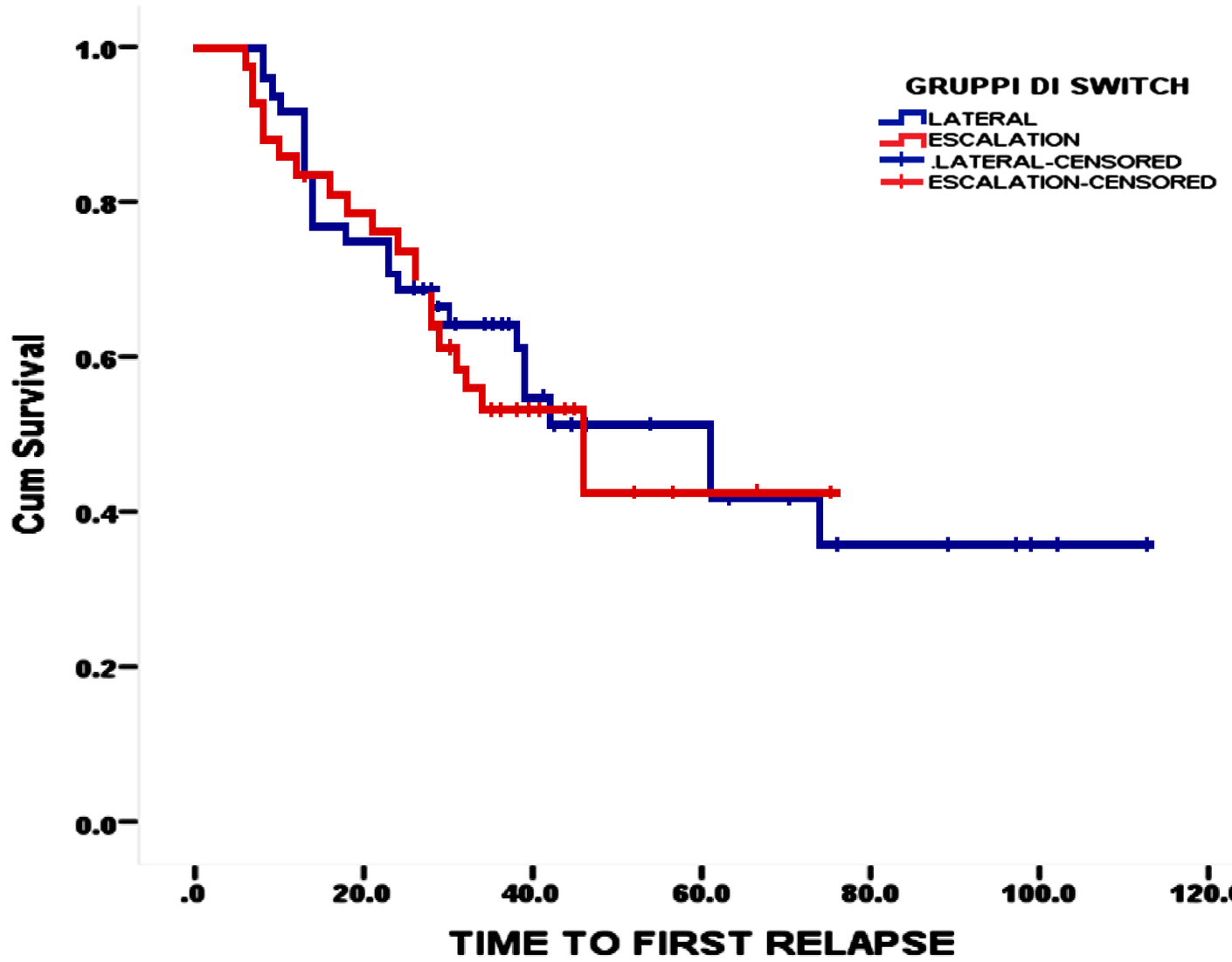



**Figure 1** No evidence of disease activity (NEDA 3*) between groups

*NEDA 3 is a composite score that consisted of absence of relapses,no sustained Expanded Disability Status Scale score progression, and no new or enlarging T2 or gadolinium-enhancing lesions on annual MRI.

**Results:** Ninety-one pwRRMS were included in the analysis. Forty-eight (52.7%) had a lateral switch, while 43 (47.3%) had an escalation switch. At baseline, groups were similar for age (lateral switch 44.5±13.4 years and escalation switch 41.5±10.3 years), EDSS (2.0±2.0 and 3.0±2.0), proportion of patients with at least one relapse the year before the switch (70.8% and 81.4% respectively), and number of T1-gadolinium lesions (0.6±1.1 and 0.6±1.2). At baseline, significant differences were found for numbers of T2 brain and spinal lesions (29.1±32.1 vs 50.9±45.1 and 1.7±1.6 vs 2.9±2.3, respectively; both p<.05). The mean follow-up period from the switch was 62.5±27.9 and 44.7±16.9 months respectively(Table 1). The proportion of pwRRMS who had "no evidence of disease-activity" over 2 years from the switch was not significantly different between the two groups (20.8% and 18.6%) (Fig.1). Twenty-four pwRRMS (50%) in the lateral group and 20 (47.6%) in the escalation group had a relapse in the follow-up period; the survival curves with the comparison tests showed no statistically significant difference between the distributions of time to reach a first relapse for the two groups (Fig.2).

**Figure 2** Time to first relapse between groups




**Conclusions**

Our clinical experience suggests that switching among first-line therapies might be effective in pwRRMS failing initial therapy. Lateral switch might still play an important role in the MS therapeutic scenario.

**References**

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