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**A Real-Life Study of Alemtuzumab: Impact of Previous Therapies and Washout Period on Disease Activity**

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## Abstract

**Objective:** To evaluate the Annualized Relapse Rate (ARR) during washout and Alemtuzumab treatment in a real-life setting.

**Background:** The effect of washout duration from previous Disease Modifying Treatment (DMT) before Alemtuzumab start is unknown. No data are currently available on the effect of Alemtuzumab when it is used after Fingolimod (FTY) or Natalizumab (NAT).

**Design/Methods:** Patients who started alemtuzumab were included in this retrospective multicenter study. Previous therapy, washout duration and relapse occurrence were retrospectively assessed. Relapse rate in each epoch was analyzed with a negative binomial model. Time to the first activity event was analyzed with a Cox model.

**Results:** We included 159 patients from 12 MS centers in Italy (Age:37.6 years, SD:9.3; 73.6% females, median EDSS:3.5, mean disease duration:9.8 years, median follow-up 319 days). Pre Alemtuzumab DMTs were: FTY (72 patients), NAT (44 patients) other (31 patients), DMT-naïve (12 patients). Mean washout before Alemtuzumab was 132 days (SD:191). 54 relapses occurred during the washout period in 36 patients (ARR=0.83). Mean time to first relapse was  $147 \pm 209$  days (range 0–1078) from the end of the last DMT. A longer washout period was associated with higher ARR during Alemtuzumab ( $p=0.044$ ) independent of previous therapy ( $p=0.43$ ). ARR in the year pre-discontinuation of last treatment was 1.18 (SD: 1.37), and decreased to 0.14 (SD:0.45) during Alemtuzumab treatment. The effect was independent of previous treatment ( $p=0.43$ ), that did not impact on time to first event ( $p=0.85$ ; either relapse/disease progression/MRI), as did not washout time ( $p=0.70$ ), or their interaction ( $p=0.78$ ).

Pre-FTY patients showed a pre-Alemtuzumab ARR of 1.25 (SD:1.03) and post-Alemtuzumab of 0.183 (SD:0.47). Similarly pre-NAT patients showed an ARR of 0.58 (SD:0.94) and 0.16 (SD:0.53) respectively.

**Conclusions:** In this cohort, previous DMTs did not influence the ARR during Alemtuzumab, that was constantly well controlled. The longer the washout, the higher the ARR, regardless of prior therapy.

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