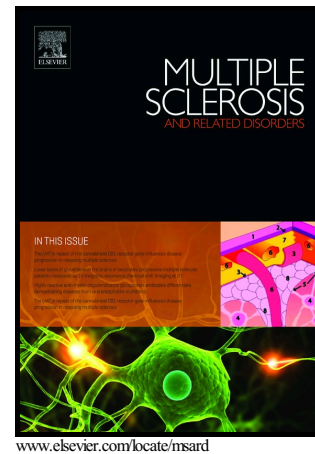


## Author's Accepted Manuscript

Marked neutropenia: significant but rare in people with multiple sclerosis after alemtuzumab treatment

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ACCEPTED MANUSCRIPT

**Marked neutropenia: significant but rare in people with multiple sclerosis after alemtuzumab treatment**

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**ABSTRACT**

**Background:**

Alemtuzumab is a CD52-specific monoclonal antibody that markedly depletes T and B lymphocytes and inhibits relapsing multiple sclerosis (MS). However, polymorphonuclear neutrophils also express CD52 and can be depleted by alemtuzumab, thereby potentially contributing to the infections that develop post-alemtuzumab treatment. Surprisingly, however, the degree of neutrophil depletion in MS was not included in the pivotal trial reports.

**Methods:**

The regulatory submission of the Comparison of Alemtuzumab and Rebif® Efficacy in MS 1 and 2 trials was obtained from the European Medicines Agency through Freedom of Information. The data relating to neutrophils was extracted.

**Results:**

Data extraction from the submission was straightforward. In year one 72/811 (8.9%) and in year two 116/808 (14.4%) people with MS (pwMS) developed neutropenia. The degree of neutropenia was generally mild, and only 5/811 (0.6%) in year 1 and 12/808 (1.5%) in year 2 developed grade 3-4 toxicity ( $<1.0 \times 10^9/L$ ). Two pwMS developed severe neutropenia-related adverse events.

**Conclusions:**

Treatment with alemtuzumab induces neutropenia, which is mild in the large majority of pwMS treated. Leucocyte levels following alemtuzumab should be monitored as a marker of efficacy and safety; persistent neutropenia may require treatment.

**KEYWORDS**

Alemtuzumab, Multiple sclerosis, polymorphonuclear neutrophils, neutropenia

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