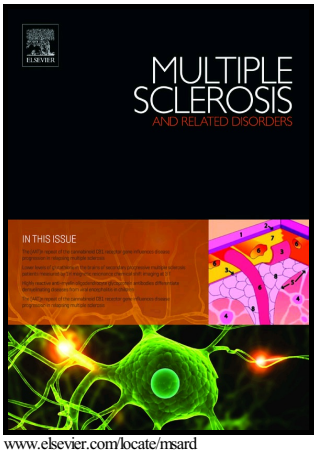
Marked neutropenia: significant but rare in people with multiple sclerosis after alemtuzumab treatment

David Baker, Gavin Giovannoni, Klaus Schmierer



www.elsevier.com/locate/msard

PII: S2211-0348(17)30238-9
DOI: http://dx.doi.org/10.1016/j.msard.2017.09.028
Reference: MSARD667

To appear in: *Multiple Sclerosis and Related Disorders*

Received date: 23 July 2017
Accepted date: 23 September 2017

Cite this article as: David Baker, Gavin Giovannoni and Klaus Schmierer, Marked neutropenia: significant but rare in people with multiple sclerosis after alemtuzumab treatment, *Multiple Sclerosis and Related Disorders,* http://dx.doi.org/10.1016/j.msard.2017.09.028

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

David Baker*, Gavin Giovannoni, Klaus Schmierer

Blizard Institute, Barts and the London School of Medicine and Dentistry. Queen Mary University of London, London E1 2AT, United Kingdom

***Correspondence:** Prof. David Baker. BartsMS, Blizard Institute, Barts and the London School of Medicine and Dentistry (Neuroscience), Queen Mary University of London, 4 Newark Street, London E1 2AT, United Kingdom. Email: david.baker@qmul.ac.uk Tel: +44 20 7882 2485.

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