T-Cell Subtype in Multiple Sclerosis Patients Treated With Fingolimod

Claudia Chaves, MD, Rik Ganguly, BS, Caitlin A. Dionne, RN, MaryAnne Muriello, MD, Ann Camac, MD

Neurology Department, Lahey Clinic, Lexington, MA, United States

OBJECTIVES

We evaluated the T-cell subtypes in MS patients treated with Fingolimod and their association with the development of opportunistic infections and malignancies.

BACKGROUND

Fingolimod (Drawing 1) is the first FDA approved oral treatment for patients with relapsing MS to reduce the frequency of clinical exacerbations and delay progression of physical disability. It is a sphingosine 1-phosphate receptor modulator that inhibits the egress of T and B cell lymphocytes from lymph nodes resulting in a pronounced lymphopenia in the peripheral blood. T-cell subtypes in this population have not been well studied.

METHODS

We retrospectively reviewed our Fingolimod database and included patients who have had T-cell subtypes studied after treatment was started. We also collected information on any infectious complications or malignancies that occurred during the treatment and its correlation to the degree and pattern of lymphopenia.

RESULTS

Fifteen patients had WBC and T cell subtypes performed on an average of 14 weeks after treatment was started. They were all Caucasian, 11 women and 4 men, mean age of 46.3. All 15 patients had a normal baseline white blood count (mean: 7.1 K/uL), 12 with normal lymphocyte count (mean: 2.1 K/uL) and 3 with a mild lymphopenia (mean: 1.1 K/uL).

The follow-up WBC (Figure 1) was normal in 7 patients (mean: 6.5 K/uL) and decreased in 8 patients (mean: 3.9 K/uL), while the absolute lymphocyte (Figure 2), T cell (Figure 3) and CD4 (Figure 4) counts in all 15 patients were low, with a mean of 0.5 K/uL, 198 NO/uL, 51 NO/uL, respectively. Low absolute CD8 (mean: 110.6 NO/uL; Figure 5) and CD19 (mean: 31.3 NO/uL; Figure 6) counts, as well as low CD4/CD8 ratio (mean: 0.46; Figure 7) were also found in 14 patients each. A high percentage of natural killers (mean: 49.1%; Figure 8) was present in 10 patients, the remaining 5 had normal values (mean: 23.8%). No infection or malignancy has occurred within a median of 10 months of follow-up.

CONCLUSIONS

Multiple sclerosis patients receiving Fingolimod demonstrated low levels of absolute lymphocytes, T (CD4, CD8) and B cell counts with a high percentage of natural killer cells. So far, no opportunistic infections or malignancies have occurred, however, further monitoring is ongoing.