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Natural Killer receptors distribution in Multiple Sclerosis

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Background

Herpes virus infections, which are believed to be involved in the pathogenesis of multiple sclerosis (MS), may influence the distribution of Natural Killer receptors (NKR) in NK and CD8+ T cells. We evaluated in MS patients the NKR profile in these lymphocytes considering different clinical variables and treatment.

Methods

Multicolour flow cytometry analysis of NKR (NKG2D, LILRB1, NKG2A, NKG2C, KIR, NKp30 and NKp46) was performed in peripheral blood NK and CD8+ T cells from 41 healthy controls and 63 MS patients, adjusting clinical variables in multivariate regression analysis.

Results

The proportions of CD8+ T cells displaying LILRB1, an inhibitory NKR expressed at late stages of T cell differentiation, were directly related with age (r 0.64, B 1.06; $p<0.001$) and MS duration (r 0.52, B 0.98; $p<0.001$), and inversely associated with interferon-β therapy (r -0.35, B -11.34; $p<0.05$); by contrast, no age-related NKR distribution was perceived in controls. Moreover, the proportions of LILRB1+ NK cells were associated with non-active MS in the previous two years (OR 0.93, CI95% 0.86-0.98, $p<0.05$). The number of $CD56^{bright}$ NK cells, a subset reported to expand after immunomodulatory therapy, negatively correlated with age and LILRB1 + lymphocytes, and was directly related with interferon-β treatment and female gender.

Conclusion

The immunophenotype observed in MS patients is consistent with a progressive accumulation of effector/memory T cells and experienced NK cells modulated by clinical course and interferon-β therapy. Further studies are required to validate the analysis of NK-associated molecules as potential biomarkers in MS clinical assessment.

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