The Journal of Immunology

ABSTRACT | MAY 01 2023

Maintenance of the naive T cell population during malnutrition is associated with residency in the bone marrow

Takesha R Foster; ... et. al

J Immunol (2023) 210 (1_Supplement): 239.05.
https://doi.org/10.4049/jimmunol.210.Supp.239.05

Maintenance of the naive T cell population during malnutrition is associated with residency in the bone marrow

Takesha R Foster[1], Kwesi A. Dadzie[1], Lindsay Moore[1], Rithanya Saravanan[1], Olivia Adams[1], Aja Washington[1], and Melanie R Gubbels Bupp[1]
[1]Randolph-Macon College

In mammals, T cell migration is under circadian control, likely to anticipate daily rhythms in infection risk. Glucocorticoids control this process, and malnutrition is associated with increased glucocorticoid levels. Therefore, we evaluated whether malnutrition disrupts the circadian migratory patterns of T cells. Malnutrition did not impact circadian patterns of T cell residency of lymphoid tissues; indicating that fluctuations, rather than specific concentrations, of glucocorticoids are a key circadian signal. Additionally, the total number of CD4+ and CD8+ T cells in the lymph nodes and blood were lower in malnourished as compared to well-nourished mice. However, the percentage and total number of naïve T cells was maintained in the lymph nodes, blood, and spleen of malnourished mice, suggesting preferential preservation of naïve T cells. Interestingly, the percentage and total number of CD4+ and CD8+ T cells in the bone marrow was elevated significantly in mice on a malnourished diet. Additionally, malnourished CD4+ and CD8+ T cells in the bone marrow showed significantly high CCR7 expression and CCL21 expression was increased in malnourished bone marrow compared to control. CCR7 and its chemokine, CCL21, may be responsible for trafficking malnourished T cells to the bone marrow during malnutrition. Overall, these findings suggest that the bone marrow may contribute to naïve T cell preservation during malnutrition.