

Malnutrition Disrupts T Cell Migration

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Malnutrition is associated with reductions in the number and function of T lymphocytes. Previous studies in the lab suggest that malnutrition may also impart a “super-quiescent” phenotype to T cells, perhaps affecting the efficiency of their migration within and between lymph nodes. Thus, the purpose of this study is to evaluate the effect of malnutrition on T cell migration in vivo and to characterize malnutrition-induced changes in the expression of proteins known to be important for T cell migration. To determine if malnourishment alters T cell migration in vivo, we compared lymph node entry rates of adoptively-transferred malnourished and control T cells in malnourished and control recipients. In agreement with other studies, control CD4⁺ T cells were more efficient than control CD8⁺ T cells at entering the lymph nodes. Interestingly, regardless of recipient diet, malnourished CD4⁺ and CD8⁺ T cells entered the lymph nodes at equivalent rates, suggesting that malnourishment eliminates distinct lymph node entry efficiencies for CD8⁺ and CD4⁺ T cells. We also found important differences in the expression of key proteins involved in T cell migration between malnourished and control mice. Overall, we found that malnutrition disrupts T cell migration including the distinct migration efficiencies of CD4⁺ and CD8⁺ T cells. An improved understanding of T cell-intrinsic changes that occur during malnourishment should enhance our knowledge of CD4⁺ and CD8⁺ T cell migration and shed light on how organisms adapt to malnutrition.