Lymphocyte subsets and specific T-cell immune response in thalassemia

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Abstract

Infection is very common in thalassemia and is one of the major causes of death. To date, it is not quite clear why these patients are susceptible to infection. In this study, lymphocyte immunophenotyping for CD3+ (T-cells), CD3+CD4+ (T-helper/inducer cells), CD3+CD8+ (T-suppressor/cytotoxic cells), CD3−CD19+ (B-cells), and CD3−CD16/56+ (natural killer cells) subsets and expression of the activation antigen CD69 on CD3+CD4+ and CD3+CD8+ T-cells were determined in the whole blood of thalassemia patients, using a three-color flow cytometric technique. Results showed that only splenectomized β-thalassemia/hemoglobin (Hb) E patients displayed a marked increase in absolute number of all lymphocytes. In addition, splenectomized β-thalassemia/Hb E showed a significantly lower percentage of CD3+ cells, with a corresponding increase in CD19+ cells. These differences, when compared with normal subjects and other thalassemia patients, may be attributed to splenectomy, α-thalassemia patients, on the other hand, showed no significant difference from the normal group. While lymphocyte subsets in splenectomized β-thalassemia/Hb E patients showed an abnormal distribution, T-cell activation in these patients was not different from the activation seen in normal subjects. This implies that thalassemia patients, during the steady state of disease, appear to have normal T-lymphocyte function with only moderate abnormalities of T- and B-lymphocyte subsets.

Keywords: Flow cytometry; Immune response; Lymphocyte subsets; Thalassemia

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