Flow Cytometric Analysis of T-Cell-Rich B-Cell Lymphoma

A 61-year-old female was admitted to our hospital because of a left cervical lymphadenopathy in October 1993. The biopsied lymph node was replaced by diffuse infiltrations of lymphoid cells. Most of the cells recognized in the lesion were morphologically small-sized lymphocytes, while large-sized lymphoid cells with both irregular-shaped nuclei and prominent nucleoli were few (fig. 1). FCM using fresh lymph node cells was performed. A small number of large-sized cells were clearly separated from an overwhelming number of small-sized cells on the cyto-gram (fig. 2). When the whole cells were analyzed, pan T-cell antigens (CD2, CD3, CD5 and CD7) were expressed on more than 70% of them (table 1). CD11b-positive cells were negligible (1%). We further divided the whole cells into large- and small-sized cell populations by gate settings. In the large-sized cell population, most of the cells were found to be positive for CD19, CD20 and κ-chain, but few λ-chain-positive cells were observed. The T-cell antigens such as CD2, CD3, CD4, CD5, CD7 and CD8 were almost
negative, although many of the cells expressed CD45RO, which is occasionally expressed on non-Hodgkin’s lymphoma (B-cell type) cells [5]. Thus, this population was considered as large neoplastic B-cells with mono-typic immunoglobulin. On the contrary, the majority of small-sized cells were positive for the pan T-cell antigens, CD3, CD4, and CD8. CD4+CD8+ cells were almost absent (0.5%). Thus, these small-sized cells were regarded as mature T-cells. This patient was diagnosed as having TCRBCL.

To our knowledge, only one report has employed FCM to analyze TCRBCLs, but failed to detect neoplastic cells with monotypic immunoglobulin in all of the 5 cases studied [2]. Based on cell size, however, neoplastic cells could be clearly discriminated from mature T-cells in the present case.

Many aspects of TCRBCL remain unsolved. Among these are the precise immunophenotype and modulatory role of the infiltrating T-cells [3]. Various investigators have considered possible modulatory roles of the abundant T-cells recognized in TCRBCLs, but no hypothesis has been based upon precise immunophenotypes of the T-cells. In the present case, the proportions of T-cell subsets and their expressions of activation-associated markers were quite different from the ranges of normal lymph nodes [6]. The majority of the T-cells were considered as activated/memory cytotoxic suppressor T-cells (CD3+ CD8+CD11b-CD38+CD45RO+HLA-DR+ cells) [7, 8]. Thus, our results strongly suggest the role of T-cells in TCRBCLs as indicated in tumor-infiltrating T-lymphocytes [9], and are also relevant to the previous report which suggested that oligoclonal T-cells recognized in TCRBCLs may be sensitized by B-neoplastic cell antigens [4].

Although this report represents only one example, further studies using FCM may provide valuable information for biological characteristics of TCRBCL.

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References