Potential macrophage-T progenitor origin of systemic anaplastic large cell lymphoma

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Abstract: Systemic anaplastic large cell lymphoma (ALCL) is considered a cytotoxic T-cell neoplasm. We characterized 21 systemic anaplastic lymphoma kinase (ALK)-positive and 11 ALK-negative ALCL cases by immunophenotyping, Southern blot (SBA) and BIOMED-2 PCR analysis of immunoassociated genes. ALK-positive cases expressed T-cell markers (TCR βF1, 19%; CD3, 14%; CD4, 71%; CD25, 86%), T/NK-cell-related antigens (TIA1, 95%; granzyme B, 57%; CD122, 77%) and myelomonocyte markers (CD13, 28%; CD68, 27%) by immunostaining. ALK-negative cases expressed TCR βF1 (40%), CD3 (27%), CD4 (73%), CD25 (91%), TIA1 (46%), CD122 (44%) and CD13 (10%). SBA indicated TCR β gene rearrangement in 4 (31%) of 13 ALK-positive and 3 (33%) of 9 ALK-negative cases. BIOMED-2 PCR analysis indicated clonal VDJ peaks of TCR β and γ genes in 6 (67%) and 8 (89%) of 9 ALK-positive cases, and in 3 (38%) and 5 (63%) of 8 ALK-negative cases respectively. All CD13- and/or CD68-positive lymphomas showed a germline configuration of TCR genes. T-cell related antigens, especially of TCR βF1 tended to express in systemic ALCL with rearrangement of TCR β gene by the SBA. BIOMED-2 PCR analysis suggested the presence of reactive T cell clone around the tumor cells in about one-third of ALCL cases. These data suggest that systemic ALCL has characteristics of T cells, NK cells and/or myelomonocytes. Therefore, systemic ALCL may be derived from a macrophage-T progenitor with potential differentiation to T, NK cells and histiomonocytes.

Key words: **Anaplastic large cell lymphoma, gene expression, immunohistochemistry**