TWO CASES OF ACQUIRED IMMUNODEFICIENCY SYNDROME-RELATED LYMPHOMA WITH SIMULTANEOUS CLONAL REARRANGEMENTS OF B-CELL AND T-CELL GENES

To the Editor:

Persons infected with the human immunodeficiency virus (HIV) are at increased risk for the development of malignant lymphoma.\(^1\) When analyzed with molecular techniques, all of these acquired immunodeficiency syndrome (AIDS)-related lymphomas (ARL) have been shown to contain clonal rearrangements of portions of B-cell genes such as Ig heavy chain (\(J_H\)) and Ig light chain (\(C_L\)).\(^2,3\)

Clonal rearrangements of T-cell genes such as the T-cell receptor (TCR\(\gamma\)) have generally not been detected in ARL,\(^2,4\) except in rare cases of T-cell lymphoma developing in AIDS patients.\(^5,6\) To our knowledge, simultaneous clonal rearrangements of B-cell and T-cell genes have not been previously documented in ARL. In this report, we describe the molecular and phenotypic features of two cases of ARL that contained simultaneous clonal rearrangements of B-cell and T-cell genes.

Clinical specimens from 10 HIV-infected persons were used in this study. Each case was evaluated by routine microscopy as well as by phenotyping studies (flow cytometry; immunoperoxidase staining) to establish a diagnosis. The study set included four cases of small noncleaved cell lymphoma and six cases of large cell lymphoma (3 immunoblastic, plasmacytoid type; 3 large cell lymphoma).

Frozen cell suspensions from each case were submitted to Collaborative Diagnostics (Waltham, MA) for DNA clonality studies. Ten probe/enzyme combinations (\(J_H/BamHI\); \(J_H/EcoRI\); \(C\_\mu/BamHI\); \(C\_\mu/EcoRI\); TCR\(\gamma/BamHI\); TCR\(\gamma/EcoRI\); TCR\(\gamma/HindIII\); J\(\mu/HindIII\); TCRB\(\beta/BamHI\); TCRB\(\beta/EcoRI\); J\(\delta/HindIII\); TCRB\(\delta/BglII\)) were used to test for antigen receptor gene rearrangements in an isotopic Southern blot. The results of each analysis were reviewed and interpreted by Dr Jeffrey Sklar (Medical Director of Collaborative Diagnostics).

All of the ARL cases had clonal rearrangements of \(J_H\), and 9/10 had clonal rearrangements of \(C\_\mu\) as well. Unexpectedly, two ARL cases also had clonal rearrangements of TCR\(\beta\). The first case, from a 38-year-old man with disseminated large cell immunoblastic lymphoma and ascites, had clonal rearrangements of \(J_H\), \(C\_\mu\), \(C\_\kappa\), and TCR\(\beta\) (Fig 1). Flow cytometric analysis indicated the following profile: 1% CD2; 18% CD10; 2% CD19; 3% CD20; 3% \(\kappa\) light chain; 0% \(\lambda\) light chain; 97% surface Ig (weak, nonspecific pattern).

The second case, from a 26-year-old HIV-infected man with a small noncleaved cell lymphoma of the scrotum, had clonal rearrangements of \(J_H\), \(C\_\kappa\), and faint rearrangement of TCR\(\beta\) with deletion of the 4.0-kb germline band (Fig 2). The immunoperoxidase staining of the tumor was suggestive of a B-cell lymphoma (Leu 22--; CD45++; L26++; \(\kappa\) and \(\lambda\) light chain-negative).

We conclude that these two unusual cases of ARL of indeterminate lymphoid lineage expressed simultaneous clonal rearrangements of B-cell and T-cell genes. The most likely explanation is that these cases each represent a single clone of malignant lymphocytes containing both Ig gene rearrangements and TCR gene rearrangements. Alternatively, two clones may be present—one clone with Ig gene rearrangements and the other with TCR gene rearrangements. However, this explanation is considered less likely because there was no microscopic evidence of a dimorphic tumor cell population.

Our findings are significant because they suggest that unambiguous assignment of lymphoid lineage in ARL may not always be possible, even with molecular and immunologic techniques. Therefore, it will be important in future surveys of ARL to analyze the tissues for the presence of clonal rearrangements of TCR\(\beta\) to determine the frequency of this variant. While the majority of ARL cases are of unambiguous B-cell origin, our findings suggest the possibility that the molecular classification of ARL may prove to be more complex than previously thought.

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REFERENCES


Two cases of acquired immunodeficiency syndrome-related lymphoma with simultaneous clonal rearrangements of B-cell and T-cell genes [letter]

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