

## An approach in the assessment of hematolymphoid neoplasms

Accurate assessment of tissues for hematolymphoid neoplasms requires an integrated multiparameter approach. Although morphologic examination by light microscopy remains the mainstay of initial assessment for hematolymphoid neoplasms, immunophenotypic analysis by immunohistochemistry and/or flow cytometry is essential to determine the pattern of differentiation and to detect minimal disease when morphology is inconclusive. In some cases, immunophenotypic analysis provides additional information for targeted immunotherapy and prognostication. Genotypic studies, including cytogenetics, fluorescence in situ hybridization, DNA microarray, polymerase chain reaction, and/or next-generation sequencing, are also imperative for subclassification of the genetically defined disease entities in the current World Health Organization classification of hematolymphoid neoplasms 2016. Moreover, genotypic studies can establish clonality, stratify patients to determine appropriate treatment, and monitor patients for treatment response. In the last several decades, technologic advances have dramatically increased our understanding of the biology of normal hematopoiesis and the pathogenesis of hematolymphoid neoplasms. In parallel, a variety of powerful analytic tools, such as immunohistochemistry, flow cytometry, fluorescence in situ hybridization (FISH), DNA micro-array, polymerase chain reaction (PCR), and next-generation sequencing (NGS), have become available in the clinical laboratories. These tools have been integrated into the routine evaluation of tissues for hematolymphoid neoplasms and have, over time, revolutionized the clinical practice of hematopathology. In this article, an approach to the assessment of hematolymphoid neoplasms is discussed.

**Key Words:** Paraffin Immunohistochemistry, Flow Cytometry, Cytogenetics.

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