Lymphoma pathology: basic immunohistochemistry for lymphoma diagnosis

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Immunohistochemistry is a method of detecting specific proteins in cells using an antigen-antibody interaction and is very essential part of the lymphoma diagnosis. Immunohistochemistry is used for several purposes in lymphoma diagnosis; 1) to identify the cell lineage and phase of maturation; 2) to detect a specific genetic alteration; 3) to visualize the degree of cell proliferation; and 4) to find therapeutic targets. CD3 is a pan T-cell marker, and expressed on most mature T/NK-cell lymphomas except for anaplastic large cell lymphoma. CD20 is a pan B-cell marker, and expressed on most mature B-cell lymphomas. CD79a may be a good alternative marker to CD20 when CD20 is lost due to the plasmacytic differentiation of tumor cell or the previous use of rituximab. CD56, widely used as a neuroendocrine marker, is used as a marker for NK cells in the diagnosis of lymphoma. Characteristic translocations occurring in follicular lymphoma (BCL2), and mantle cell lymphoma (CCND1) can be detected by overexpression of bcl-2, and cyclin D-1 in immunohistochemistry, respectively. Ki-67 shows the degree of tumor cell proliferation by indicating cells in the cell cycle phases other than G0. With the development of immunotherapy, several antibodies such as PD-L1, CD19 and CD30 are being used as biomarkers to find therapeutic targets. In order to obtain an accurate result in immunohistochemistry, proper fixation of the specimen is very important. Therefore, for the diagnosis of lymphoma, all processes from the tissue collection to the final pathologic diagnosis must be performed appropriately.