Diffuse Large B-Cell Lymphomas and Burkitt Lymphoma

Laurence de Leval, MD, PhD[a,*], Robert Paul Hasserjian, MD[b]

KEYWORDS

• WHO 2008 classification • Diffuse large B-cell lymphoma
• Burkitt • Burkitt-like • High-grade • Pathology • Genetics
• Diagnosis

DIFFUSE LARGE B-CELL LYMPHOMAS

Diffuse large B-cell lymphomas (DLBCLs), defined as neoplasms of large transformed B cells (with nuclear diameter more than twice that of a normal lymphocyte), account for 30% to 40% of all adult non-Hodgkin lymphomas. Although an increasing number of subtypes and entities have been recognized by virtue of their distinctive immunophenotypic and/or clinical and pathologic features, the majority of cases fall into the category of DLBCL, not otherwise specified (DLBCL, NOS). DLBCL, NOS is the usual form of DLBCL and represents the diagnosis assigned after exclusion of more specific categories (**Box 1**).

Diffuse Large B-cell Lymphoma, Not Otherwise Specified

DLBCL, NOS usually affects adults with a median age at presentation in the seventh decade, but it also affects children and young adults. The disease may arise in any anatomic location and up to one-third of cases present in extranodal sites. DLBCL, NOS may occur de novo or as a transformation from an underlying small B-cell lymphoma.

Morphology

By order of decreasing frequency, the centroblastic, immunoblastic, and anaplastic variants are the most common morphologic variants (**Fig. 1**). Occasional tumors are made up of signet ring or spindled cells and may be confused with nonhematologic tumors. Given the poor reproducibility of cytologic classification and unresolved

Laurence de Leval is a senior research associate of the Belgian National Fund for Scientific Research.
[a] Department of Pathology, C.H.U. Sart Tilman, Institute of Pathology, B23, +1, B – 4000-Liège, Belgium
[b] Department of Pathology, Massachusetts General Hospital, 55 Fruit Street, Boston, MA 02114, USA
* Corresponding author.
E-mail address: l.deleval@ulg.ac.be (L. de Leval).

Hematol Oncol Clin N Am 23 (2009) 791–827
doi:10.1016/j.hoc.2009.04.004 **hemonc.theclinics.com**
0889-8588/09/$ – see front matter

Box 1
Classification of diffuse large B-cell lymphomas and Burkitt lymphoma

Diffuse large B-cell lymphomas (DLBCLs)

Diffuse large B-cell lymphoma, not otherwise specified

- Morphologic variants: centroblastic, immunoblastic, anaplastic
- Molecular subgroups[a]
- Immunohistochemical subgroups[a]

Diffuse large B-cell lymphoma subtypes

- T-cell/histiocyte-rich large B-cell lymphoma
- Primary DLBCL of the central nervous system[a]
- Primary cutaneous DLBCL, leg type[a]
- Epstein Barr virus-positive DLBCL of the elderely[a]

Diffuse large B-cell lymphoma entities

- Primary mediastinal (thymic) large B-cell lymphoma
- Intravascular large B-cell lymphoma
- DLBCL associated with chronic inflammation (previously called pyothorax-associated lymphoma)
- Lymphomatoid granulomatosis
- Anaplastic lymphoma kinase–positive large B-cell lymphoma[b]
- Plasmablastic lymphoma[b]
- Large B-cell lymphoma arising in human herpesvirus-8–associated multicentric Castleman disease[a]
- Primary effusion lymphoma

Burkitt lymphoma (BL)

Borderline categories

- B-cell lymphoma, unclassifiable, with features intermediate between DLBCL and BL[a]
- B-cell lymphoma, unclassifiable, with features intermediate between DLBCL and classical Hodgkin lymphoma[a]

[a] designates recently recognized entities in the 2008 WHO Classification that were not listed in the 2001 Classification.
[b] listed as DLBCL variants in the 2001 Classification.
Data from Swerdlow SH, Campo E, Harris NL, et al. WHO Classification of tumours of haematopoietic and lymphoid tissues. Lyon: IARC Press; 2008.

controversy regarding possible worse prognosis of immunoblastic tumors, there is no consensus on the usefulness of morphologic subtyping.[1,2]

Bone marrow involvement in DLBCL, seen in about 15% of the cases, may appear either as a large-cell infiltrate or, slightly more commonly, as an infiltrate of predominantly small B cells (“discordant” marrow involvement); prognosis in the latter is not worse than that in cases without marrow involvement, but it may confer a higher risk of late relapses.[3,4]