SOX 11 clone ILQ-158

Mouse Monoclonal Antibody

Instructions For Use

Specification:

Mantle cell lymphoma (MCL) accounts for 5% to 10% of mature B-cell neoplasms and is an aggressive disease genetically characterized by overexpression of cyclin D1 (CCND1) due to the specific translocation t(11;14) (q13;q32)1. It is necessary that MCL be distinguished from potential morphologic mimics, including chronic lymphocytic leukemia/ small lymphocytic lymphoma (CLL/SLL), follicular lymphoma (FL), and marginal zone lymphoma (MZL) based on immunohistochemical (IHC) staining for CD5, CD23, and CD101. MCL and CLL both express CD5 but MCL, in contrast to CLL, generally lacks CD23 expression by IHC. FL lacks expression of both CD5 and CD23 but most often expresses CD10, whereas MZL is typically negative for all 3 antigens1. Cyclin D1 overexpression is thus the hallmark of MCL even though approximately 5%-10% of MCLs lack Cyclin D1 expression and may be misdiagnosed by overreliance on CyclinD1 IHC2-3. The recognition of cyclin D1-negative MCL is difficult because it may resemble other small B-cell lymphomas morphologically and phenotypically4. Although the clinical information on cyclin D1-negative MCL is limited, published data indicate that the behavior of the variant is as aggressive as that of conventional MCL4,5. On the other hand, patients with small B-cell lymphomas mimicking MCL have a significantly better outcome than those with true MCL. It is, therefore, important to find reliable biomarkers that may allow the identification of cyclin D1-negative MCL in clinical practice.

SOX-11, the SRY (sex-determining region Y)-box11 gene, a transcription factor, normally is expressed in the developing human central nervous system6, medulloblastoma7, and glioma8. In a series study4, SOX- 11 expression was investigated in 54 cyclin D1-positive MCL and 209 other lymphoid neoplasms. Interestingly, nearly all MCL were strongly positive for anti-SOX-11 (50/54, 93%), with a nuclear pattern. The staining was intense and relatively homogeneous in most of the cells. Compared to anti-cyclin D1 staining, anti-SOX-11 reactivity was stronger and more homogeneous. Five T-cell and B-cell lymphoblastic leukemia/lymphomas showed strong SOX-11 nuclear expression. One case of classic Hodgkin lymphoma, two of eight BL and two of three T-cell prolymphocytic leukemias were also positive. SOX-11 protein expression was examined by immunohistochemistry in the 12 cyclin D1-negative MCL, and all of them showed strong nuclear positive staining similar to that occurring in conventional cyclin D1-positive MCL4. The expression of SOX-11 in reactive tonsil, lymph node and spleen specimens was studied4. No nuclear expression was observed in any lymphocyte compartment4. Only cytoplasmic staining was seen in cells from reactive germinal centers. Zeng et al.9 has evaluated SOX- 11 expression by immunohistochemistry in 140 cases of mature B-cell neoplasms, including 4 cases of suspected blastoid MCL that lacked cyclin D1 expression and 8 cases of CD5-positive diffuse large B-cell lymphoma (DLBCL). Nuclear expression of SOX-11 was found in cyclin D1-positive MCL (30/30, 100%) and in a case of cyclin D1-negative MCL with typical morphology. SOX-11 was expressed in Burkitt lymphoma (1/5, 20%) and lymphoblastic lymphoma (2/3 T-LBLs, 2/2 B-LBLs, overall 4/5, 80%), whereas all cases of DLBCL (including CD5-positive DLBCL) and other small B-cell neoplasms were negative. The 4 suspected cases of blastoid MCL were also anti-SOX-11-positive. These cases had a complex karyotype that included 12p abnormalities. Therefore, the authors confirmed prior reports that SOX-11 nuclear expression was a specific marker for MCL, including cyclin D1-negative MCL with typical morphology. Their study indicates that SOX-11 IHC is of value in further defining pathologic features of CD5+ DLBCL. Routine use of anti-SOX-11 in cases of suspected CD5+ DLBCL might help identify additional cases of cyclin D1-negative blastoid MCL.

In summary, nuclear protein expression of SOX-11 is highly associated with both cyclin D1-positve and negative MCL. The detection of this transcription factor is a useful biomarker for identifying true cyclin D1- negative MCL. SOX-11 IHC is of value in further defining pathologic features of CD5+ DLBCL. Routine use of anti-SOX-11 in cases of suspected CD5+ DLBCL might help identify additional cases of cyclin D1-negative blastoid MCL. SOX-11 can also be detected in some BL, LBL and T-PLL, although the different morphological and phenotypic features of these malignancies allow easy recognition of the cases of cyclin D1-negative MCL.

Availability:

Catalog No.	Contents	Volume
ILM3823-C01	SOX 11	0,1 ml concentrate
ILM3823-C05	SOX 11	0,5 ml concentrate
ILM3823-C1	SOX 11	1,0 ml concentrate

Intended use: For Research Use Only

Reactivity: Human

Clone: ILQ-158

Species of origin: Mouse

Isotype: IgG1

Control Tissue: Mantle cell lymphoma

Staining: Nuclear

Presentation: This antibody is diluted in Tris Buffer, pH 7.3-7.7, with 1% BSA and <0.1% Sodium Azide

Application and suggested dilutions:
Pretreatment: Heat induced epitope retrieval in 10 mM citrate buffer, pH6.0, or in 50 mM Tris buffer pH9.5, for 20 minutes is required for IHC staining on formalin-fixed, paraffin embedded tissue sections.

- Immunohistochemical staining of formalin-fixed, paraffin embedded tissue section (dilution up to 1:25-1:100)

The optimal dilution for a specific application should be determined by the investigator.

Note: Dilute the antibody in 10% normal goat serum followed by a goat anti-mouse secondary antibody-based detection is recommended.

Storage & Stability: Store at 2-8 °C. Do not use after expiration date printed on the vial.

References:

1) Salaverria, I et al. Mantle cell lymphoma: from pathology and molecular pathogenesis to new therapeutic perspectives. Haematologica 2006; 91:11-6.
2) Fu, K et al. Cyclin D1-negative mantle cell lymphoma: a clinicopathologic study based on gene expression profiling. Blood 2005; 106:4315-21.
3) Katzenberger, T et al. Delineation of distinct tumour profiles in mantle cell lymphoma by detailed cytogenetic,interphase genetic and morphological analysis. Br J Haematol 2008; 142:538-50.
4) Mozos, A et al. SOX-11 expression is highly specific for mantle cell lymphoma and identifies the cyclin D1-negative subtype. Haematologica 2009; 94:1555-1562.
5) Wlodarska, I et al. Translocations targeting CCND2, CCND3, and MYCN do occur in t(11;14)-negative mantle cell lymphomas. Blood 2008; 111:5683-90.
6) Hargrave, M et al. Expression of the SOX-11 gene in mouse embryos suggests roles in neuronal maturation and epithelio-mesenchymal induction. Dev Dyn 1997; 210: 79-86.
7) Lee, CJ et al. Differential expression of SOX4 and SOX-11 in medulloblastoma. J Neurooncol 2002; 57: 201-14.
8) Weigle, B et al. Highly specific overexpression of the transcription factor SOX-11 in human malignant gliomas. Oncol Rep 2005; 13:139- 44.
9) Zeng, W et al. Cyclin D1-negative blastoid mantle cell lymphoma identified by SOX-11 expression. Am J Surg Pathol 2012; 36:214-219.