WHITEPAPER

Meet the Marker - Hairy Cell Leukemia

BIOCARE MEDICAL

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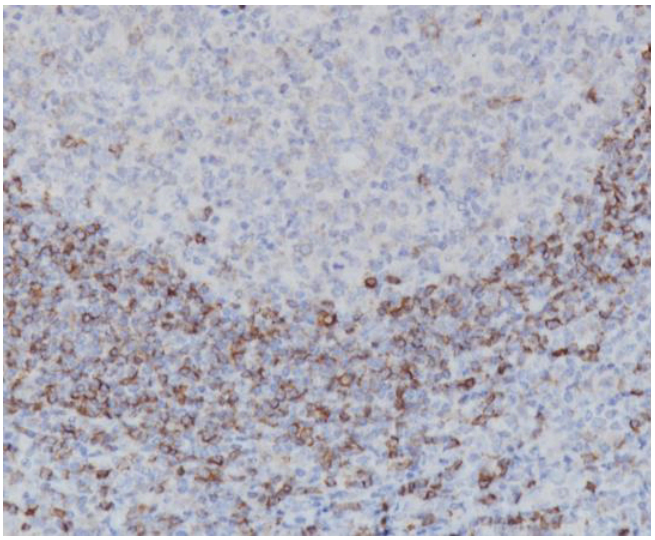
Hairy Cell Leukemia (HCL) is a disorder of the B cells, also known as B lymphocytes, a type of immune cell that produces antibodies. It is characterized by abnormal production of B cells, and as its name suggests, the hallmark of HCL is the presence of B cells showing "hairy" cytoplasmic projections in peripheral blood and bone marrow.[1] This condition is extremely rare, with only 1000 new cases being diagnosed in the United States every year.[2] Although it remains an incurable disease, multiple treatments have been developed to manage the condition, and it is characterized by long periods of remission, with a median progression-free survival of approximately 9 to 11 years.[2] Traces of HCL cells are measured in terms of minimal residual disease (MRD) and may cause relapse, which occurs In approximately 40% of patients after 9 years.[2,3]

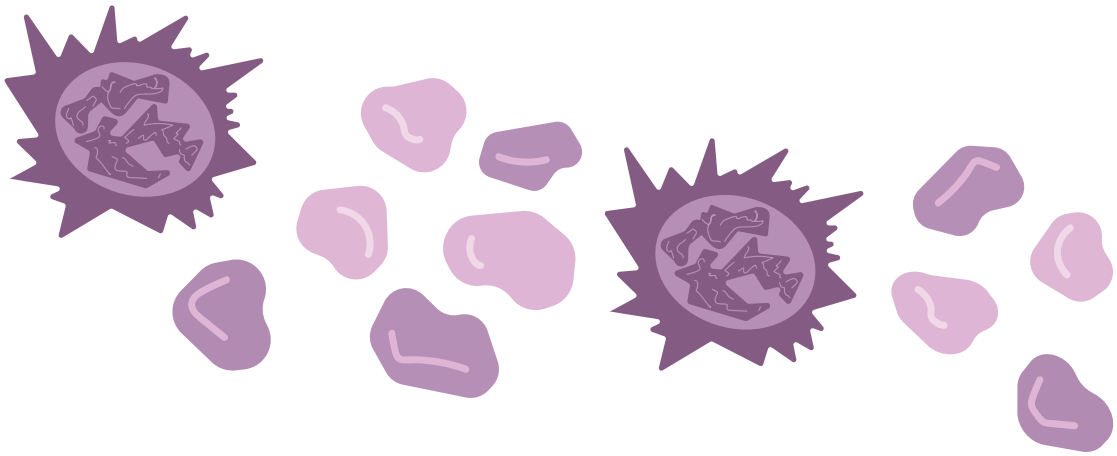
The HCL disease state shares its name with its immunohistochemical marker, Hairy Cell Leukemia [DBA.44] (also referred to as DBA.44), since the exact antigen that DBA.44 marks is still unclear. However, it is known to be a reliable immunohistochemical (IHC) marker of HCL when stained in conjunction with other markers, as it is generally not used as a standalone stain.[4] A combination of DBA.44 and Tartrate-resistant acid phosphatase (TRAP) is commonly used, and its combined expression has been shown to have a high sensitivity for HCL.1 Additionally, leukemic cells are known to express the markers CD22, CD20, CD25, annexin 1A (Anxa1), T-bet, and BRAF.[3,4] Given the wide range of acceptable markers for HCL, preferred staining panels for HCL may vary by laboratory, but diagnosis of HCL is typically straightforward due to its unique characteristic features.[4,5]

TRAP and DBA.44 positivity is also present in Variant Hairy Cell Leukemia (HCL-V), a rare disease with similar morphology and features to HCL, as well as in some cases of Splenic Marginal Zone Lymphoma SMZL and Extranodal Marginal Zone Lymphoma ENMZL.[1,4]

Hairy Cell Leukemia stains and illustrations



Tonsil stained with Hairy Cell Leukemia [DBA.44] antibody



To learn more about Hairy Cell Leukemia [DBA.44], please visit our website at biocare.net or call Technical Support at 1-800-799-9499, Option 3.

1. Dunphy C. H. (2008). Reaction patterns of TRAP and DBA.44 in hairy cell leukemia, hairy cell variant, and nodal and extranodal marginal zone B-cell lymphomas. Applied immunohistochemistry & molecular morphology : AIMM, 16(2), 135–139. https://doi.org/10.1097/PAI.0b013e3180471fd4

2. Getta, B. M., Park, J. H., & Tallman, M. S. (2015). Hairy cell leukemia: Past, present and future. Best practice & research. Clinical haematology, 28(4), 269–272. https://doi.org/10.1016/j.beha.2015.10.015

3. Kreitman R. J. (2019). Hairy cell leukemia: present and future directions. Leukemia & lymphoma, 60(12), 2869–2879. https://doi.org/10.1080/10428194.2019.1608536

4. Sherman, M. J., Hanson, C. A., & Hoyer, J. D. (2011). An assessment of the usefulness of immunohistochemical stains in the diagnosis of hairy cell leukemia. American journal of clinical pathology, 136(3), 390–399. https://doi.org/10.1309/AJCP5GE1PSBMBZTW

5. Tóth-Lipták, J., Piukovics, K., Borbényi, Z., Demeter, J., Bagdi, E., & Krenács, L. (2015). A comprehensive immunophenotypic marker analysis of hairy cell leukemia in paraffin-embedded bone marrow trephine biopsies--a tissue microarray study. Pathology oncology research : POR, 21(1), 203–211. https://doi.org/10.1007/s12253-014-9807-5