MYD88 L265P Mutation Detection by PCR, Quantitative

Last Literature Review: October 2019 Last Update: July 2022

The *MYD88* L265P mutation has been identified in the majority of patients with Waldenström macroglobulinemia and lymphoplasmacytic lymphoma (LPL) and is useful in differentiating LPL from other low-grade B-cell lymphoproliferative disorders that may be considered in the differential diagnosis. *MYD88* L265P mutation detection assists in determining treatment options and in monitoring disease progression in individuals diagnosed with LPL and a previously identified *MYD88* L265P mutation.[1,2,3]

Disease Overview

Prevalence

3-4/million; mostly affects older individuals[4,5]

Diagnostic/Treatment Issues

MYD88 L265P mutations are present in the majority of LPL cases

- Includes Waldenström macroglobulinemia
- Marker for risk of progression from monoclonal gammopathy of undetermined significance (MGUS) IgM to Waldenström macroglobulinemia
- Mutation also detected in a low percentage of chronic lymphocytic leukemia (CLL) and diffuse large B-cell lymphoma (DLBCL) patients

Genetics

Gene

MYD88

Structure/Function

- *MYD88* gene encodes for myeloid differentiation primary response 88 (MYD88), an adaptor protein that acts as a signal transducer in the interleukin-1 and toll-like receptor signaling pathways
- *MYD88* L265P mutation augments cell survival through increased NF-κB activity and JAK-STAT3 signaling

Test Interpretation

Analytic Sensitivity

0.5% mutant allele

Results

- Detected: *MYD88* L265P mutation detected
  - Quantitated as % of *MYD88* L265P mutant allele
  - Strongly supports a diagnosis of LPL in the presence of appropriate clinical and histologic setting
- Not detected: no mutation detected

Limitations

- Does not detect mutations in other regions of the *MYD88* gene
- Does not detect *MYD88* codon 265 mutations other than L265P
- Results of this test must be interpreted in the context of morphological and other relevant data
- Test should not be used alone to diagnose malignancy

References

1. Martinez-Lopez A, Curiel-Olmo S, Mollejo M, et al. MYD88 (L265P) somatic mutation in marginal zone B-cell lymphoma. *Am J Surg Pathol*. 2015;39(5):644-651.

2. Hamadeh F, MacNamara SP, Aguilera NS, et al. MYD88 L265P mutation analysis helps define nodal lymphoplasmacytic lymphoma. *Mod Pathol*. 2015;28(4):564-574.

3. Yu X, Li W, Deng Q, et al. L265P Mutation in Lymphoid Malignancies. *Cancer Res*. 2018;78(10):2457-2462.

4. Fonseca R, Hayman S. Waldenström macroglobulinaemia. *Br J Haematol*. 2007;138(6):700-720.

5. Groves FD, Travis LB, Devesa SS, et al. Waldenström's macroglobulinemia: incidence patterns in the United States, 1988-1994. *Cancer*. 1998;82(6):1078-1081.

ARUP Laboratories is a nonprofit enterprise of the University of Utah and its Department of Pathology. 500 Chipeta Way, Salt Lake City, UT 84108
(800) 522-2787 | (801) 583-2787 | aruplab.com | arupconsult.com