MYC (8q24) Gene Rearrangement by FISH

FOR THE DIAGNOSIS OF BURKITT LYMPHOMA

Test Highlights

- The *MYC* (8q24) fluorescence in situ hybridization (FISH) probe is designed to detect the chromosomal rearrangements t(8;22)(q23;q11) and t(2;8)(p11;q24), which deregulate the *MYC* gene at 8q24 in a subset of Burkitt lymphomas.

Disease Overview

- Burkitt lymphoma is a rare form of non-Hodgkin lymphoma of B cells that is strongly associated with Epstein Barr Virus (EBV). Direct evidence of EBV infection is present in one of five patients. Over 90 percent of affected children have disease in the abdomen in addition to lymph nodes.
- Burkitt lymphoma is closely associated with a t(8;14) translocation. Detection of t(8;14) may aid in Burkitt lymphoma diagnosis.
- However, a subset of Burkitt lymphomas lack the t(8;14) and have either a t(8;22)(q24;q11) or a t(2;8)(p11q24) instead.

Epidemiology

- Burkitt lymphoma occurs mainly in children. Rare adult cases are associated with immunodeficiency, particularly AIDS.
- There are two broad types of Burkitt lymphoma: sporadic and endemic. There is a very high incidence of this disease in equatorial Africa, where it is labeled endemic Burkitt lymphoma. Disease in other regions of the world is much less common, and is called sporadic Burkitt lymphoma.

Genetics

The LSI *MYC* dual color break apart rearrangement probe has been optimized for identifying the rearrangements t(8;22)(q23;q11) and t(2;8)(p11;q24).

Pathophysiology

- The cause of lymphomas is largely unknown, though some viral infections, such as EBV and HIV, appear to lead to disease in some individuals.
- The distinction of Burkitt lymphoma from other lymphomas is important and provides prognostic and therapeutic information.

Indications for Ordering

Patients diagnosed with or suspected of having Burkitt lymphoma based on morphology or immunophenotypic studies.

Additional Ordering Notes

- The biopsy site and fixative used should be provided.
- The submitted sample should contain sufficient variable tumor.

Interpretation

Presence of an (8q;24) rearrangement is strongly supportive of a diagnosis of Burkitt lymphoma.

Limitations

Tissue fixed in alcohol-based or non-formalin fixatives has not been tested using this method.

Methodology

The FISH methodology utilizes a MYC dual color break apart rearrangement probe.

Related Tests

FISH testing should be performed to confirm a suspected diagnosis of lymphoma. The following tests can be used as an initial screen for lymphoma:

- Leukemia/Lymphoma Phenotyping (Comprehensive—Whole Blood) (0096299)
- Leukemia/Lymphoma Phenotyping (Comprehensive—Bone Marrow) (0095244)
- Leukemia/Lymphoma Phenotyping (Comprehensive—Miscellaneous) (0095243)

Reference

1. LSI® *MYC* Dual Color, Break Apart Probe (package insert). Des Plains, IL: Abbott Molecular; 2010.

Test Information

2002345 ***MYC* (8q24) Gene Rearrangement by FISH**

For specific collection, transport, and testing information, refer to the ARUP website at www.aruplab.com.
For information on test selection, ordering, and interpretation, refer to ARUP Consult® at www.arupconsult.com.

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