IRF4/DUSP22 Gene Rearrangement by FISH

The IRF4/DUSP22 locus is rearranged in a newly recognized subtype of non-Hodgkin lymphoma, large B-cell lymphoma with IRF4 rearrangement. These lymphomas are uncommon, but are clinically distinct from morphologically similar lymphomas, including diffuse large B-cell lymphoma, high-grade follicular lymphoma, and pediatric-type follicular lymphoma. The IRF4/DUSP22 locus is also rearranged in a subset of ALK-negative anaplastic large cell lymphomas (ALCL), where this rearrangement is associated with a significantly better prognosis.

Disease Overview

Incidence

- Large B-cell lymphoma with IRF4 rearrangement accounts for <1% of all non-Hodgkin B-cell lymphomas overall
  - More common in younger patients, with an incidence of 5-6% under age 18
- IRF4/DUSP22 rearrangement is found in 30% of ALK-negative ALCLs

Symptoms/Findings

Large B-cell lymphoma with IRF4 rearrangement typically presents with limited stage disease in the head and neck, while the presentation of ALK-negative ALCLs is variable.

Disease-Oriented Information

Patients with large B-cell lymphoma with IRF4 rearrangement typically have a favorable outcome after treatment. Rearrangement of the IRF4/DUSP22 locus in ALK-negative ALCL is associated with a better prognosis than ALK-negative ALCL without this rearrangement.

Test Interpretation

Analytical Sensitivity

The limit of detection (LOD) for the IRF4/DUSP22 probe was established by calculating the upper limit of the abnormal signal pattern in normal cells using the Microsoft Excel BETAINV function. The LOD of IRF4/DUSP22 fluorescence in situ hybridization (FISH) is 11% when 100 cells are enumerated. Using the LOD of 11% the analytical sensitivity was found to be 100% when testing two 6p25 rearranged samples.

Results

Positive

- Depending on the context of the case, the presence of the 6p25 gene rearrangement supports a diagnosis of large B-cell lymphoma with IRF4 rearrangement or ALK-negative ALCL with IRF4/DUSP22 rearrangement.

Negative

- Absence of the 6p25 gene rearrangement

Limitations

- IRF4/DUSP22 FISH testing has not been validated for
  - Tissue fixed in alcohol-based or non-formalin fixatives
  - Decalcified tissue
- Results should be analyzed in conjunction with morphology, immunohistochemistry, and immunophenotyping results.
Additional Resources


Related Information

Mature B-Cell Lymphomas
T-Cell and NK-Cell Lymphomas

Related Tests

**MUM1/IRF4 by Immunohistochemistry 2003975**
*Method:* Immunohistochemistry

**BCL-6 by Immunohistochemistry 2003457**
*Method:* Immunohistochemistry

**BCL-2 by Immunohistochemistry 2004513**
*Method:* Immunohistochemistry