Chronic Lymphocytic Leukemia Minimal Residual Disease Detection by Flow Cytometry

Chronic lymphocytic leukemia (CLL) is the most common cancer of the blood and can involve lymph nodes, bone marrow, and peripheral blood. Patients undergoing treatment for CLL can be tested for evidence of remaining malignant cells in the bone marrow and peripheral blood to determine the effectiveness of therapy and aid in prognosis.

Test Interpretation

Clinical Sensitivity

Limit of detection: 0.0039%

Limit of quantification: 0.01%

- Sensitivity is dependent on the quality of the sample (sensitivity is lower in some samples, particularly hypocellular or hemodilute samples) and the immunophenotype of the malignant cells.

Results

- Results may be reported as:
  - **Positive** for residual CLL/small lymphocytic lymphoma (SLL)
  - **Positive** but below the limit of quantitation for residual CLL/SLL
  - **Negative** for residual CLL/SLL
  - **Suspicious** for residual CLL/SLL
  - **Suboptimal** specimen without evidence of residual CLL/SLL
- Aberrant cells will be reported as percentage of total viable leukocytes
- Marker expression on aberrant cells will be reported with respect to the normal B-cell population (per the Bethesda recommendations for flow cytometry reporting)

Limitations

- Poor cell viability may adversely affect antigens and impede the ability to properly identify neoplastic cells
- Number of events collected may affect sensitivity
- Test does not assess for aberrant myeloid cells/blasts or T-cell or other B-cell lymphoproliferative neoplasms
- Flow results should not be used alone to diagnose malignancy
- Should be interpreted in conjunction with morphology, clinical information, and other necessary ancillary tests for a definitive diagnosis

Related Information

Chronic Lymphocytic Leukemia - CLL

Tests to Consider

Chronic Lymphocytic Leukemia Minimum Residual Disease by Flow Cytometry 3003142

Method: Flow Cytometry

- Aids in monitoring therapy in individuals with an established diagnosis of CLL
- Use for detection of minimal residual disease (MRD) in patients after treatment for CLL/small lymphocytic lymphoma (SLL)
- Not appropriate for initial diagnosis of CLL

Leukemia/Lymphoma Phenotyping Evaluation by Flow Cytometry 3001780

Method: Flow Cytometry

Aids in evaluation of hematopoietic neoplasms (ie, leukemia, lymphoma)

Use to monitor therapy in patients with established diagnosis of hematopoietic neoplasms

Chromosome FISH, CLL Panel (Temporary Referral as of 10/13/20) 2002295

Method: Fluorescence in situ Hybridization (FISH)

- Aids in risk stratification of individuals with CLL/SLL
- Recommended at initial diagnosis and at relapse to monitor for cytogenetic progression
- Not appropriate for monitoring low-level disease

Chronic Lymphocytic Leukemia Mutation Panel by Next Generation Sequencing 3001858

Method: Massively Parallel Sequencing

Use to assess for single gene mutations, including substitutions and smaller insertions and deletions that may have implications for prognosis or clinical management in patients with CLL or other B-cell lymphoproliferative disorders