Leukemia/Lymphoma Phenotyping by Flow Cytometry

Indications for Ordering

• Aid in evaluation of hematopoietic neoplasms (eg, leukemia, lymphoma)
  o Specimens include bone marrow, whole blood, tissue, or fluid
• Monitor response to therapy in individuals with established diagnosis of hematopoietic neoplasms

Test Description

• Five-color flow cytometry
  o A screening panel of markers will be ordered based on provided clinical information and/or previous test results
  o Additional markers may need to be analyzed to fully characterize any abnormalities identified by the screening panel
    ▪ This set of markers will be chosen by the pathologist who interprets the screening panel
• Antigens included
  o T cell – CD1, CD2, CD3, CD4, CD5, CD7, CD8, TCR α-β, TCR γ-δ, cytoplasmic CD3
  o B cell – CD10, CD19, CD20, CD22, CD23, CD103, kappa, lambda, FMC7, cytoplasmic kappa, cytoplasmic lambda
  o Myeloid/monocyte – CD11b, CD13, CD14 (Mo2), CD14 (MY4), CD15, CD33, CD64, CD117, myeloperoxidase
  o Miscellaneous – CD11c, CD16, CD25, CD30, CD34, CD38, CD41, CD42b, CD45, CD56, CD57, CD61, HLA-DR, glycoporphin, TdT, bcl-2, ALK-1, CD123, CD138, CD200, CD26, CD45

Tests to Consider

Primary test
Leukemia/Lymphoma Phenotyping by Flow Cytometry 2008003
  • Aid in evaluation of hematopoietic neoplasms
  • Monitor therapy in patients with established diagnosis of hematopoietic neoplasms

Related tests
Acute leukemia diagnosis
  • Acute Lymphocytic Leukemia (ALL) Panel by FISH, Adult 2002647
  • Acute Lymphocytic Leukemia (ALL) Panel by FISH, Pediatric 2002719
  • Chromosome FISH, Interphase 2002298
  • Cytogenomic SNP Microarray - Oncology 2006325

Disease Overview

Diagnosis/treatment issues
  • Phenotyping by flow cytometry helps to establish diagnosis for hematopoietic neoplasms
  • Phenotyping may aid in monitoring therapy in individuals with established diagnosis

Test Interpretation

Clinical sensitivity – limit of detection 0.01-1.0% depending on phenotype and disease
Results
- Antigens will be reported as positive or negative
  - Positive result will be reported as percentage
- Interpretive comments are included that further characterize intensity patterns
  - Dim, bright, variable, or partial may be reported
- Light-chain intensity will be reported as high, low, or restricted
  - May include kappa/lambda ratio
- Pattern of CD antigen testing will be interpreted with possible suggestions for further testing if indicated

Limitations
- Some hematopoietic neoplasms do not show phenotypic abnormalities and therefore may not be detected by flow cytometry
- Poor cell viability may adversely affect antigens and impede the ability to properly identify neoplastic cells
- Flow results cannot be used alone to diagnose malignancy
  - Should be interpreted in conjunction with morphology, clinical information, and other necessary ancillary tests for a definitive diagnosis