CYFRA 21-1 (Cytokeratin 19 Fragment) in Lung Cancer

CYFRA 21-1 (cytokeratin 19 fragment) has been demonstrated as clinically useful in the
prognostication and monitoring of non-small cell lung cancer (NSCLC). Elevated pretreatment
levels may be associated with unfavorable prognosis, and decreasing levels during therapy
predict an objective response to treatment. However, the level of CYFRA 21-1 cannot be used
as absolute evidence for the presence or absence of disease and results must be viewed in
context with other clinical evidence.

DISEASE OVERVIEW

Prevalence
Lung cancer is the second most common cancer in U.S. and the most common cause of
cancer-related deaths in both men and women.

Physiology
- Cytokeratins are intermediate filament structural proteins found in the cytoskeleton of
epithelial tissue
  - The two types of cytokeratins are:
    - Acidic type I
    - Basic or neutral type II
  - Release of cytokeratins into the circulation occurs by numerous mechanisms such as:
    - Cellular apoptosis
    - Abnormal mitosis
    - Spillover from proliferating cells
  - Cytokeratins are detected as partially degraded, single-protein fragments or complexes,
    but no intact molecules
  - Elevations of cytokeratins are observed in lung cancer of all histologic types of NSCLC

Prognosis/Monitoring Issues
- CYFRA 21-1 has been demonstrated as clinically useful in prognostication and monitoring
  1,2,3
- Elevated pretreatment CYFRA 21-1 in NSCLC is reported to be associated with unfavorable prognosis
- Decreasing concentrations of CYFRA 21-1 in NSCLC predict objective response to treatment in advanced disease 4,5

TEST INTERPRETATION

Sensitivity
Clinical sensitivity: varies by disease stage 6
Analytical sensitivity: limit of detection is 0.5 ng/mL

Results
Possible results include:
- Elevated
- Normal (does not rule out NSCLC)

Limitations
- Test is not suitable for lung cancer screening
- Results obtained with different tests or kits cannot be used interchangeably
- Test interference may occur with:
  - Hemolyzed specimens
  - Icteric specimens
  - Lipemic specimens
  - Interfering antibodies in specimen (human antimouse or heterophile antibodies)
- CYFRA 21-1 may also be elevated in:
  - Benign respiratory disease
  - Other cancers:
    - Urologic
    - Gastrointestinal
    - Gynecological


RELATED INFORMATION

Non-Small Cell Lung Cancer - Non-Small Cell Lung Cancer Molecular Markers