

Anaplastic Lymphoma Kinase-1 Immunohistochemistry

Anaplastic Lymphoma Kinase (Alk-1): Negative

Test Description

Anaplastic lymphoma kinase (ALK) is a receptor tyrosine kinase of the insulin receptor superfamily. *ALK* gene rearrangements were first discovered in NSCLC in 2007 by Soda et al. who identified that the 3' end of *ALK* was juxtaposed to the 5' end of echinoderm microtubule-associated protein-like 4 (*EML4*) gene attributable to an inversion within chromosome 2p. The most common *ALK* rearrangement is fusion of its 3' kinase domain with truncated portions of the (N-terminal) echinoderm microtubule-associated protein-like 4 (*EML4*) gene as a result of inversion within the short arm of chromosome 2. Assessment of *EML4-ALK* gene rearrangement/*ALK* protein expression in advanced stages of lung cancer has become standard of care for the management of advanced NSCLC patients. *ALK* may also be amplified through mutation, as in neuroblastomas. Various solid tumors, such as non-small cell lung carcinoma (NSCLC) and brain cancers were also found to aberrantly express *ALK*.

Specimen

Sample Type: FFPE block 8922/22
Site: Lymph node.
Pathology ID: MOLQ/IHC-012/22
Disease: Non Hodgkin Lymphoma

Interpretation

Positive: Strong, brown, granular cytoplasmic staining.

Negative: Absence of strong granular cytoplasmic staining.

Methodology

Immunostaining for Alk protein was done using Ventana anti-ALK(D5F3) CDX

Note

A potentially better assay to select patients to receive an *ALK* inhibitor is one that detects *ALK* expression at the protein level. This assay would then allow one to verify that the actual protein target of the inhibitor, that is, the ATP-binding pocket in the kinase domain of *ALK*, is present, alleviate any concern about unproductive ligation after rearrangement, and detect any expression mediated by any other aberrant non-rearrangement mechanism. *ALK* is not normally expressed in the lung and any expression would be considered abnormal.

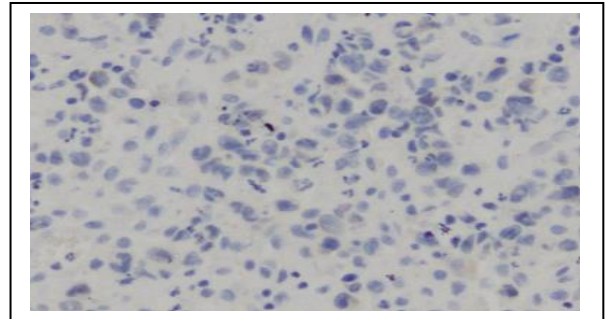
References

1. Rosai and Ackerman's Surgical Pathology.
2. Biomarkers for *ALK* and *ROS1* in Lung Cancer: Immunohistochemistry and Fluorescent In Situ Hybridization Peter P. Luk et al. Archives of Pathology & Laboratory Medicine 2018 142(8).
3. Immunohistochemistry for predictive biomarkers in non-small cell lung cancer Mari Mino-Kenudson Transl Lung Cancer Res. 2017 Oct; 6(5).
4. Anaplastic lymphoma kinase status in lung cancers: An immunohistochemistry and fluorescence *in situ* hybridization study from a tertiary cancer center in India. SS Murthy et al. Indian Journal of Cancer 2017 54(1).
5. ALK Immunohistochemistry in NSCLC: Discordant Staining Can Impact Patient Treatment Regimen Merdolbrahim Molq Laboratory (A Unit of Molecular Quest Healthcare Pvt. Ltd.)

Microscopy Evaluation

**ALK(D5F3) staining for tumor cells:
NEGATIVE**

ALK IHC- Tumor Cells



Reviewed By



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ALK-1 IHC

PATIENT	REPORT DATE	BOOKING ID
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