PATIENT	REPORT DATE	BOOKING ID
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c-Ros oncogene 1 (Ros 1) Immunohistochemistry

Test Description

The c-ros oncogene 1 (*ROS1*) is an oncogene that encodes a transmembrane receptor tyrosine kinase from the insulin receptor subfamily and shares 49% amino acid sequence homology with *ALK* in the kinase domain. The *ROS1* fusion gene has been demonstrated to transform NIH3T3 fibroblasts in vitro and induce tumorigenesis in lung alveolar epithelial cells in vivo. Recently, *ROS1* fusions have been discovered in several other tumors, including cholangiocarcinoma, non-small-cell lung cancer (NSCLC), ovarian cancer, gastric carcinoma, and colorectal cancer suggesting that *ROS1* is likely to be an effective molecular target in these patients.

Specimen

Sample Type: FFPE block 3196/19A
Site: Mediastinal Lymph Node
Pathology ID: MOLQ/IHC-19042019
Disease: History of endometrial cancer

Interpretation

Positive: Strong, brown, granular cytoplasmic staining.
Negative: Absence of strong granular cytoplasmic staining.
Scoring: (Intensity)
0: Negative, 1+: Weak Staining, 2+: Moderate Staining, 3+: Strong Staining.
H Score: Intensity x % of Tumor cells stained positive
Range: 0-300 (>100 is Optimal threshold positive)

Methodology

Immunostaining for Ros1 protein was done using Cell Signaling Technology Ros (69D6) Mouse mAb.

Note

ROS1 rearrangements occur infrequently in lung biopsies, however given the frequency of lung cancer in the population, *ROS1*-rearranged tumors represent a significant number of cancer patients. *ROS1*-rearranged lung cancers are dependent on ROS1 for survival and are thus sensitive to treatment using ROS1-targeted TKIs. Today, the National Comprehensive Cancer Network (NCCN) guidelines recommend testing for ROS1—along with EGFR, ALK, and PD-L1—at the time of diagnosis of metastatic NSCLC *ROS1*-rearranged lung cancers are dependent on ROS1 for growth and survival. It is imperative that laboratories implement simple and cost-effective screening tools to identify patients with *ROS1*-rearranged lung cancer.

References

1. Rosai and Ackerman's Surgical Pathology.
2. ROS1 Immunohistochemistry for Detection of *ROS1* Rearranged Lung Adenocarcinomas Lynette M. Sholl et al. Am J Surg Pathol. 2013 Sep; 37(9).
3. Testing for *ROS1* in non-small cell lung cancer: a review with recommendations Lukas Bubendorf Virchows Arch. 2016; 469(5).
4. Savic S, Bubendorf L. Role of fluorescence in situ hybridization in lung cancer cytology. Acta Cytol. 2012;56(6):611–621
5. PD-L1 expression in *ROS1*-rearranged non-small cell lung cancer: A study using simultaneous genotypic screening of *EGFR*, *ALK*, and *ROS1* Jongmin Lee et al.Thorac Cancer. 2019 Jan; 10(1).

c-Ros oncogene 1 (Ros 1): Negative

Microscopy Evaluation

Tumor cells: 90%

Tumor cells positive for Ros1: Negative
H Score: 00%

Ros 1 IH - Tumor

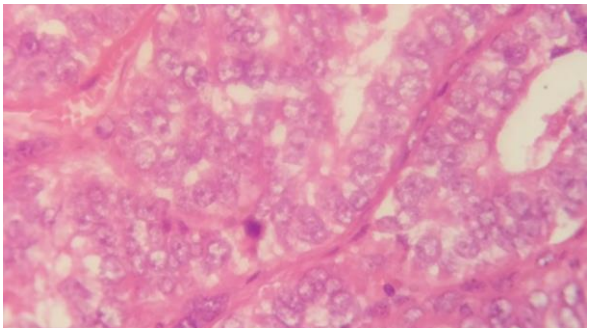

Figure 1

Ros 1 IHC- Tumor Cells

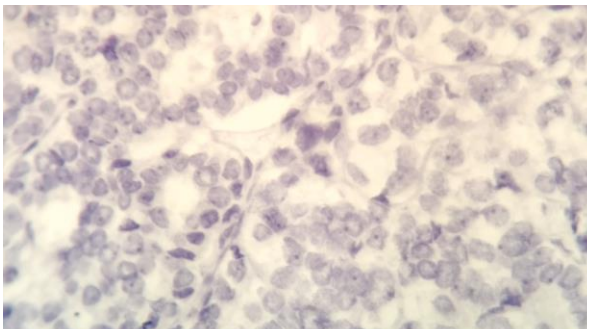

Figure 2

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