Evaluation of Anaplastic lymphoma kinase (ALK) rearrangements using ALK/EML4 TriCheck Fluorescence In Situ Hybridisation (FISH) in Non-Small Cell Lung Cancers (NSCLC)

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Aims: Accurate assessment of ALK gene rearrangement in NSCLCs is critical to identify patients likely to respond to crizotinib. Currently, the gold standard is FISH (Abbott Molecular ALK break apart probe). We evaluated a new ALK/EML4 TriCheck FISH Probe for the detection of ALK rearrangements and confirmation of EML4 as the inversion partner.

Methods: ALK FISH was prospectively performed on 16 routine diagnostic cases using the ALK/EML4 TriCheck Probe (ZytoVision) and the Vysis ALK Break Apart FISH Probe (Abbott Molecular). ALK immunohistochemistry (IHC) was performed using the 5A4 clone antibody (Novocastra).

Results: Both probes were concordant in all cases except for one case which showed an atypical signal pattern using the Abbott Molecular ALK probe. This case was technically negative using standard scoring criteria for the Abbott probe, despite positive ALK IHC, but was confirmed as positive using the ZytoVision TriCheck probe. Of the 9 ALK rearranged cases, 4 showed evidence of EML4 translocation.

Discussion: The ALK/EML4 TriCheck FISH Probe is useful for the detection of ALK gene rearrangements, including those involving EML4 as the translocation partner, especially for borderline cases or cases displaying atypical signal patterns, where an additional unique ALK FISH probe can provide further confirmation of rearrangement.

Discipline: Anatomical Pathology

Original idea by CS, WC and SO. CS and TL contributed to FISH and IHC staining. CS, WC and SO scored FISH results. AG provided some cases and consultation. CS, WC and SO contributed to interpretation of results and writing of abstract.