An Institutional study evaluating the benefit of blood NGS over conventional hotspot molecular testing in metastatic adenocarcinoma lung.

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INTRODUCTION

• Management of metastatic adenocarcinoma lung is based on detection of molecular alterations.
• Molecular testing is now identifying varies subgroups where targeted treatments are applicable.
• In India the most common tumor tissue hotspot mutation testing are done by EGFR PCR, ALK IHC and ROS1 by FISH based methods.
• The aim of our study is to evaluate the added benefit by doing blood based NGS testing.

METHODS

• A retrospective study with subjects of metastatic lung cancer.
• Diagnosed based on histopathological examination(fig.1) from Jan 2019 until May 2020, at Manipal hospitals, Bengaluru

RESULTS

• 108 subjects, aged between 35 - 75 yrs.
• Men were 88 (83%) and 20 (18%) were women.
• Histopathological diagnosis classified adenocarcinoma in 87 (80.6%), squamous cell carcinoma in 21(19.4%), (fig.2)
• All ADENOCARCINOMA subjects were tested on tumor tissue sample for EGFR mutation by PCR, ALK by IHC and ROS1 by FISH method.
• Molecular alterations of mutation was found in 34 (39%) and 53 (60.9%) were negative. (fig.3)
• Out of 34 (39%) subjects, 29 (33%) had EGFR, 3 (31%) had ALK and 2 (2.4%) had ROS1 mutations positive. (fig.3)
• In our study we further evaluated the subjects who had wild type mutational status by conventional hotspot to liquid biopsy NGS testing. (fig.4)
• So totally only 20 (37%) out of 53 (60.9%) were subjected to NGS testing due to logistic issues. Liquid biopsy was chosen in view of inadequate tissue samples.
• We found out 14 (70%) out of 20, had detectable mutations, 6 (42%) had EGFR, 3 common and 3 uncommon mutation, 1 (7%) ALK and 1 (7%) ROS1 rearrangement, 1 (7%) had MET exon skip mutation, 2 (14%) had HER 2 mutation and 3 (21%) subjects had RAS mutation (fig.4)
• Treated 10(50%) out of 20 subjects. (fig.5)

CONCLUSION

• Subjects should be evaluated with extensive NGS panel with liquid/tissue biopsy if conventional testing is wild type for molecular alterations.
• We detected additional mutations in 14 (16%) subjects by doing NGS testing who were tested negative by conventional method.
• Of these the added benefit was in 10 (11%) subjects, where targetable mutation drugs are available, which would have missed if only conventional based testing was done.

REFERENCES
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