POSTERS

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Mutational Landscape and Tumor Mutation Burden of Indian NSCLC Patients

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Background: Understanding the mutational landscape in Indian patients with non-small cell lung cancer (NSCLC) by next generation sequencing is critical to appropriate treatment planning and delegation. Mutation analysis by NGS provides all the details on alterations and tumor mutational burden (TMB) that could be useful clinically and help identify patients with higher likelihood of response to immunotherapy. Cell-free DNA (cfDNA) has shown great potential in pre-clinical cancer detection and post diagnosis surveillance. Several studies have assessed the prognostic and predictive value of cfDNA in non-small cell lung cancer (NSCLC). High tumor mutational burden (TMB) is an emerging biomarker of sensitivity to immune checkpoint inhibitors and has been shown to be more significantly associated with response to PD-1 and PD-L1 blockade immunotherapy. **Method:** The study cohort comprised of 121 primary tumor samples and 385 cfDNA samples from patients with NSCLC. Targeted next generation sequencing was carried out using a customized panel of cancer-related genes. Appropriate optimized gene panels were used for mutation profiling of tumor DNA from tissue samples and plasma respectively. **Results:** Mutations were detected in 105 of 121 tissue samples and 233 of 385 cfDNA samples. EGFR was the most commonly mutated gene in both tissue (47%) and cfDNA (33%) followed by TP53 (tissue: 34%; cfDNA: 27%), KRAS (tissue: 9%; cfDNA: 7%), BRAF (tissue: 8%; cfDNA: 2%), PIK3CA (tissue: 8%; cfDNA: 4%), MET (tissue: 8%; cfDNA: 2%) and RB1 (tissue: 4%; cfDNA: 3%). TMB calculation for 51 tumor tissue samples showed median TMB of 8.27 mutation/Mb. TMB of >10 Mutations/Mb was observed in 19 patients (37%) and the subset of NSCLC patients with high TMB (>10 Mutations/Mb) likely have enriched tumor specific neoantigens and increased tumor immunogenicity, which can improve the response to cancer immunotherapy. **Conclusion:** This is the first study to describe the landscape of tissue based TMB in Indian patients with NSCLC. High TMB was observed in 37% of Indian NSCLC patients. TMB could be used as a biomarker for immunotherapy and would facilitate treatment in this patient cohort with a more favorable prognosis on treatment with immunotherapy.