

Prevalence of ALK Mutation in advanced NSCLC patients in the United States – analysis with a real world oncology database

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ALK mutation rate is widely reported to be 3-7% of advanced non-small cell lung carcinoma (aNSCLC) patients. A cross-sectional study to assess the prevalence of ALK mutations in the real world was performed on the nationwide Flatiron Health electronic record-derived de-identified database. Patients with aNSCLC (stage IIIB-IV) diagnosed between 1 Jan 2015 – 31 May 2019, age ≥18 at the time of aNSCLC diagnosis, known ALK result and smoking status were included in the analysis. The included patient cohort had 19,895 eligible patients, with a mean age of 68.5 (Standard deviation = 10.0), most of them were ever-smokers (85.5%) and from community centers (92.2%). The overall ALK mutation prevalence was 2.6%. Prevalence of ALK mutation was calculated by age, gender, race, ECOG status and cancer type. Non-smokers had the greatest mutation rate (9.3% non-squamous histology, 6.3% NSCLC histology not otherwise specified [NOS], 3.3% squamous) vs smokers (1.7% non-squamous, 1.4% NSCLC NOS, 0.7% squamous). Differences in ALK status varied by age and race with young patients (18-44 yrs) having a greater mutation rate (16.2%) vs older patients (age 45-64 = 4.5%, age ≥ 65 = 2.2%) and Asian patients having a mutation prevalence of 6.3%. Patients that were positive for other biomarkers (EGFR, ROS1, KRAS or BRAF) had a lower ALK positivity rate (0.5%) while patients reported to be positive for PD-L1 had an ALK mutation rate of 3.0%. While this data overwhelmingly represented testing in the community setting vs academic medical centers, it provides insight into the ALK mutation prevalence across the US. The prevalence of ALK mutations in smokers suggests that a smoking patient (with non-squamous, mixed histology or small biopsy) should not be excluded from testing. This also highlights the need to capture smoking histories as accurate pack-year histories.