Background

Lung cancer remains one of the leading causes of cancer-related mortality in both men and women worldwide. Over the last years, treatment of advanced non-small cell lung cancer (NSCLC) evolved from chemotherapy to targeted therapies for specific oncogenic mutations, highly improving treatment outcomes. Furthermore, the increasing interest in personalized medicine and the recognition of sex as a major influencing factor in disease behavior, has led to a bigger focus on understanding gender differences. To understand if there are sex-specific biomarker and treatment patterns in advanced NSCLC, we analyzed the prevalence of biomarker testing rates and results for disease-relevant biomarkers (EGFR, ALK and ROS1) and the corresponding treatment landscape.

Methodology

Anonymized patient-level data collected through a web-based questionnaire survey between January and December 2021 of 16,062 NSCLC drug treated patients was analyzed. The survey excluded any data captured in observational or interventional clinical studies, registries and real-world databases. This abstract reports the analysis of the NSCLC data collected on surveys performed to physicians in two regions: 5 countries in Europe (France, Germany, Italy, Spain, UK) and 3 countries in Asia (China, Japan and South Korea).

Conclusions

Females were more commonly tested among all biomarkers and showed more EGFR mutations. When analyzing the treatment patterns for such mutation, a higher use of Osimertinib was found in Europe compared to Asia. There is also a sex-specific treatment management for ALK-positive patients, where females are more often treated with Alectinib and males with Crizotinib in both regions. ROS1-positive female patients are more often treated with Alectinib in both regions. The results of this research highlights the differences of the NSCLC biomarker testing rates in the medical practice and the differences in the use of biomarker-specific targeted therapies between Europe and Asia.

Results

The biomarker testing rates in Europe were as follows: EGFR (female: 86% vs male: m); 77%, ALK (f: 83% vs m: 75%) and ROS1 (f: 69% vs m: 61%) and in Asia: EGFR (f: 89% vs m: 74%), ALK (f: 70% vs m: 61%) and ROS1 (f: 54% vs m: 46%) (Figure 1a).

Regarding the mutation rates for the tested population, in Europe 38% of females were EGFR mutant compared 18% men, whereas in Asia 66% of females were EGFR mutant compared to 35% men. ALK and ROS1 did not present different mutation rates between sexes. However, the ROS1-positive patient percentage is higher in Europe than in Asia (Figure 1b).

When analyzing the treatment landscape for the mutated population, there were significant differences in the treatment patterns for males and females. EGFR NSCLC female mutant patients were more often treated with Osimertinib in Europe (f: 67% vs m: 59%) whereas the difference was not so marked in Asia (f: 38% vs m: 36%). Significant differences were observed in ALK-positive patients treated with Alectinib in Europe (f: 74% vs m: 66) and Asia (f: 67% vs m: 46%). The use of Crizotinib was higher in ALK-positive males in both regions. Significant difference in treatment pattern also was found between ROS1-positive patients, where female were mainly treated with Crizotinib in Europe (f: 57% vs m: 43%) and in Asia (f: 55% vs m: 48%) in both regions (Figure 1c).