Background

The past several years have seen a number of changes in standards of care for patients with advanced non-small cell lung cancer (NSCLC), which has resulted in 5 updates to the National Comprehensive Cancer Network (NCCN) Lung Cancer Guidelines® in 2017 alone.1 As a result, oncologists are challenged to integrate evolving diagnostic paradigms into practice. A study was conducted using virtual patient simulation (VPS) technology to assess medical oncologists’ current practices regarding ordering of biomarker testing and diagnosing advanced NSCLC.

Methods

The assessment instrument consisted of 2 patient cases presented in a VPS platform that offered a simulated clinical care experience, with freedom of choice in clinical decision making matching the scope of actual practice (Figure 1).2 The VPS cases launched on January 29, 2016, and data were collected through November 29, 2016. All oncologists who made clinical decisions during this study period were included in the analysis.

Results

187 oncologists fulfilled the participation criteria by making clinical decisions within the VPS. Assessment revealed:

- In a patient with newly diagnosed advanced NSCLC, 21% of oncologists did not order histopathology to determine subtype (Figure 2A).
- In addition, rates of mutational and other biomarker testing was substantially higher, with order rates across all mutations of less than 50% (Figure 2A).
- Interestingly, although no approved targeted agent exists for MET amplification or RET assay, 17% and 23% of oncologists ordered these molecular tests, respectively (Figure 2B).
- This resulted in nearly one-fifth making an incomplete characterization and, thus, diagnoses of the patient’s disease (Figure 2B).

- In a patient with EGFR-mutated NSCLC who had progressed on a first-line epidermal growth factor receptor (EGFR) tyrosine kinase inhibitor (TKI), 20% did not order testing for T790M and 60% would not have correctly characterized the patient’s disease (Figure 3A).
- Despite little evidence or guideline at the time of the activity, 40% ordered a programmed cell death ligand 1 (PD-L1) immunohistochemistry (IHC) test (Figure 3B).
- Consistent with findings from the first case, between 11% and 18% ordered testing for other mutations for which patients may qualify for a clinical trial (Figure 3B).

Conclusions

Histopathologic and biomarker testing are critical elements for characterizing the disease of a patient with advanced NSCLC, as these tests determine the most appropriate regimen. This remains true in patients whose disease has been identified as EGFR-mutated but who progressed on first-line therapy. Our analysis of current practice using a VPS platform that immerses and engages the clinician for an authentic, practical, and consequence-free patient care experience demonstrates that there is variability in biomarker testing in oncology. In addition, our findings demonstrate a continued need to educate oncologists regarding the importance of prioritizing biomarker tests in order to select the most appropriate regimen for a patient with advanced NSCLC and optimize clinical outcomes.

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