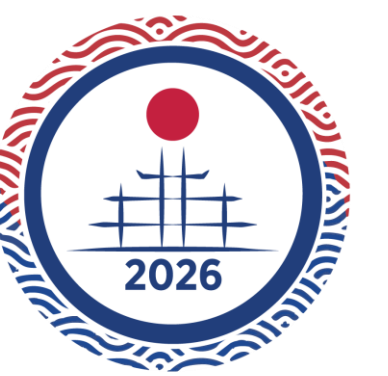




EP12.40: Real-world utilization and timing of NGS in EGFR-mutant non-small cell lung cancer: Korean EGFR registry



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INTRODUCTION

- Next-generation sequencing (NGS) enables comprehensive genomic profiling in non-small cell lung cancer (NSCLC); however, its clinical implications in EGFR-mutant NSCLC remain unclear.
- We aimed to evaluate real-world NGS utilization, timing, treatment patterns, and outcomes in a nationwide EGFR-mutant NSCLC cohort.

METHODS

- Korean EGFR Registry: Nationwide, multicenter cohort of patients with EGFR-mutant NSCLC from 40 institutions in Korea
- Patients were categorized according to NGS testing status (NGS vs. non-NGS), and treatment patterns were compared between groups.
- In stage IV disease, NGS-tested patients were further classified according to NGS timing relative to first-line treatment initiation (before vs. after first-line treatment).
- Treatment patterns and clinical outcomes were compared according to NGS timing.

RESULTS

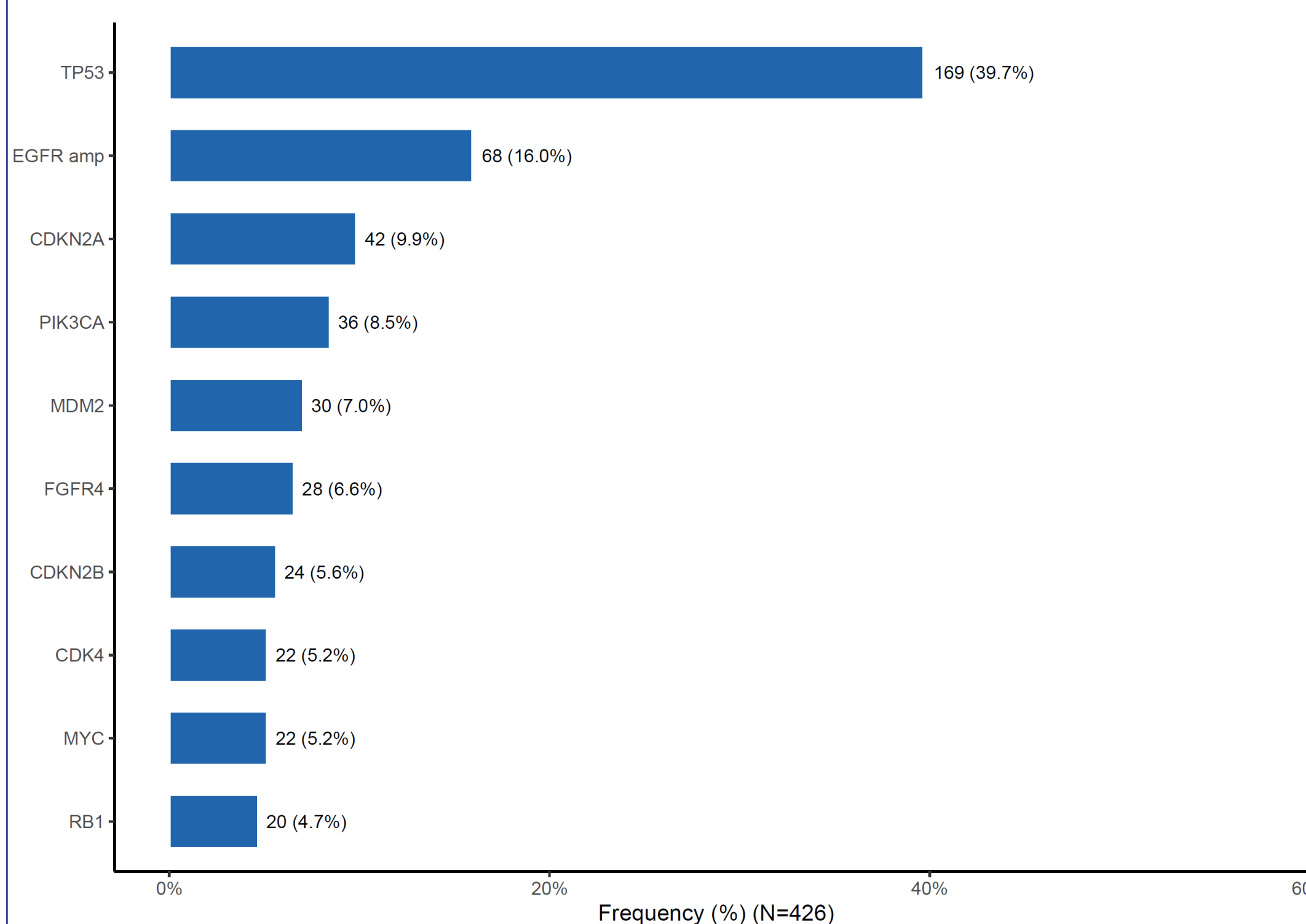
- NGS was performed in 426 of 1,954 patients (21.8%), with utilization increasing by disease stage: 11.8%, 16.2%, 19.4%, and 27.4% in stages I–IV, respectively. (**Table 1**)
- Most NGS tests were performed using tissue samples (96.7%), with a median interval of 6 days from diagnosis to NGS testing.

Table 1. Characteristics of NGS testing in patients with EGFR-mutant NSCLC

Variables	NGS group
Initial stage	
Stage I	59 (13.8%)
Stage II	17 (4.0%)
Stage III	44 (10.3%)
Stage IV	306 (71.8%)
Sample type	
Tissue	412 (96.7%)
Blood	8 (1.9%)
Unknown	6 (1.4%)
Number of NGS Tests Performed	
1	426 (100.0%)
2	23 (5.4%)
Time from diagnosis to NGS testing, mean (95% CI), days	133.2 (101.0-173.6)
Time from diagnosis to NGS testing, median (95% CI), days	6.0 (6.0-8.0)

- The most frequent co-occurring genomic alterations were TP53 (39.7%), EGFR amplification (16.0%), CDKN2A (9.9%), and PIK3CA (8.5%). (**Figure 1**)

Figure 1. Co-occurring genomic alterations in NGS-tested patients with EGFR-mutant NSCLC



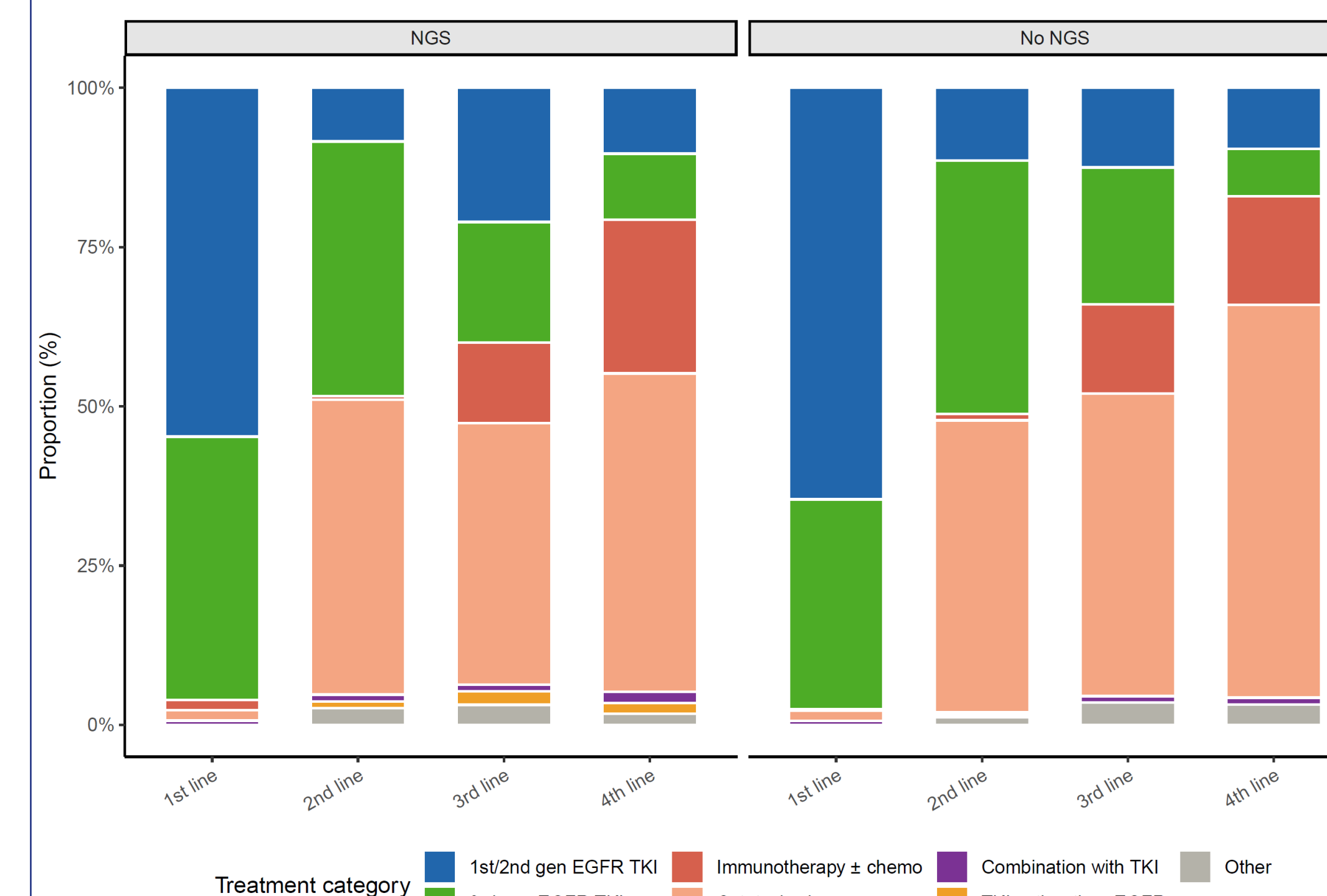
- Among 1,116 patients with stage IV disease, 306 (27.4%) underwent NGS testing.
- NGS-tested patients were younger, had better performance status, and more frequently had brain metastases than non-NGS patients. (**Table 2**)

Table 2. Baseline characteristics according to NGS testing status in stage IV EGFR-mutant NSCLC

Variable	Total (N=1116)	NGS (N=306)	No NGS (N=810)	p-value
Age, median (IQR)	69.0 (61.0-77.0)	66.0 (58.2-73.0)	70.0 (62.0-78.0)	<0.001
Sex (%)				
Male	453 (40.6%)	117 (38.2%)	336 (41.5%)	0.359
Female	663 (59.4%)	189 (61.8%)	474 (58.5%)	
Smoking history (%)				
Never	708 (63.4%)	201 (65.7%)	507 (62.6%)	0.331
Ever	404 (36.2%)	103 (33.7%)	301 (37.2%)	
BMI, median (IQR)	22.9 (20.9-25.0)	22.9 (20.8-24.8)	22.9 (20.9-25.0)	0.730
ECOG PS (%)				
0-1	920 (82.4%)	275 (89.9%)	645 (79.6%)	0.008
≥2	84 (7.5%)	13 (4.2%)	71 (8.8%)	
Histologic subtype (%)				
Adenocarcinoma	1074 (96.2%)	297 (97.1%)	777 (95.9%)	0.396
Squamous	17 (1.5%)	2 (0.7%)	15 (1.9%)	
Others	25 (2.2%)	7 (2.3%)	18 (2.2%)	
EGFR mutational status (%)				
19del	567 (50.8%)	144 (47.1%)	423 (52.2%)	0.302
L858R	493 (44.2%)	146 (47.7%)	347 (42.8%)	
Uncommon/compound	56 (5.0%)	16 (5.2%)	40 (4.9%)	
PD-L1 expression (%) (tested N=1029)				
<1%	429 (41.7%)	114 (38.6%)	315 (42.9%)	0.409
1-49%	430 (41.8%)	132 (44.7%)	298 (40.6%)	
≥50%	170 (16.5%)	49 (16.6%)	121 (16.5%)	
Brain metastasis (%)				
No	615 (55.1%)	151 (49.3%)	464 (57.3%)	0.021
Yes	501 (44.9%)	155 (50.7%)	346 (42.7%)	

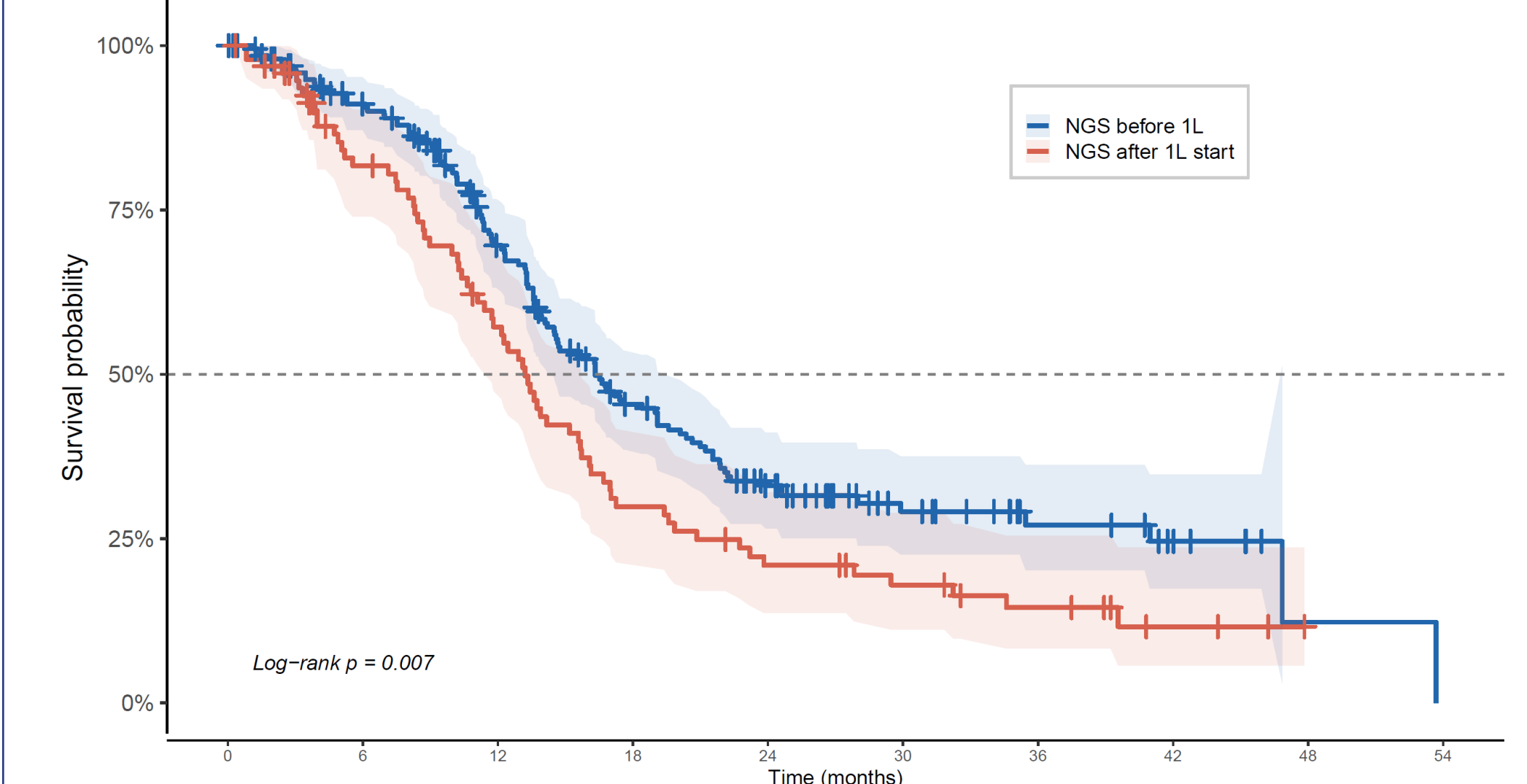
- Third-generation EGFR-TKIs were more frequently used as first-line therapy in the NGS group (41.3% vs. 32.9%; p=0.006), with no significant differences in subsequent treatment lines. (**Figure 2**)

Figure 2. Treatment patterns according to NGS testing status in stage IV EGFR-mutant NSCLC



- Among NGS-tested patients with stage IV disease, 67.8% underwent NGS before first-line treatment.
- NGS before first-line treatment was associated with longer PFS (adjusted HR 0.692; p=0.028), but not OS (p=0.329). (**Figure 3**)

Figure 3. Progression-free survival according to NGS timing in NGS-tested patients with stage IV EGFR-mutant NSCLC



- TP53 was associated with shorter PFS and OS.
- MDM2 with longer PFS and ATM with shorter OS.

CONCLUSION

- NGS utilization remained limited in EGFR-mutant NSCLC but increased with advancing disease stage.
- In stage IV disease, NGS performed before first-line treatment was independently associated with longer PFS, but not OS.
- These findings highlight real-world heterogeneity in NGS utilization and timing and warrant further investigation into the clinical implications of early genomic profiling.

ACKNOWLEDGEMENTS

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