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Survival Outcomes With The Use of Immunotherapy in Patients with Metastatic Non-Small Cell Lung Cancer at a Large Hybrid Cancer Institute

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Background:

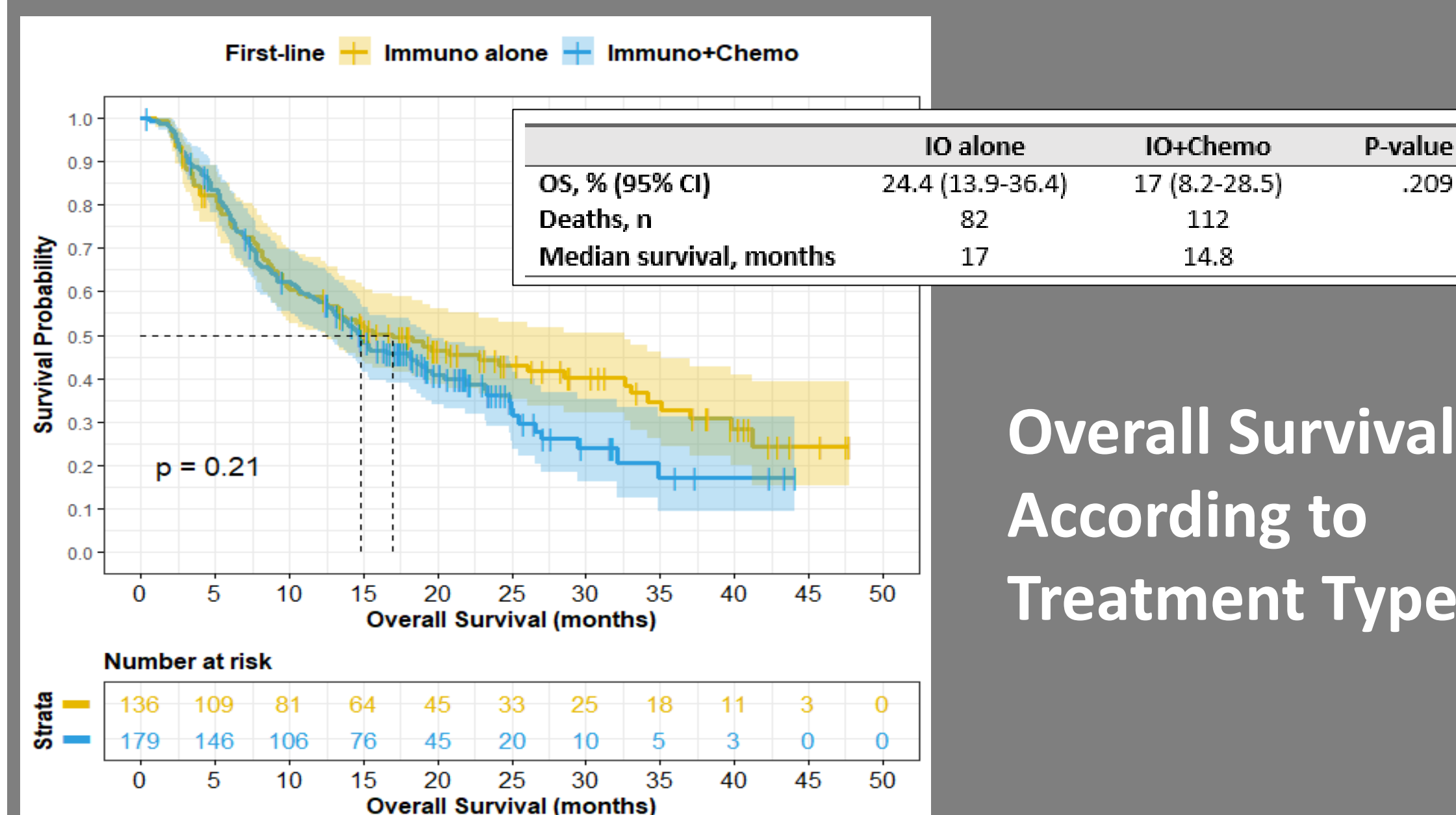
- Median overall survival (OS) in landmark trials evaluating immunotherapy (IO) as compared to chemotherapy (chemo) in patients with metastatic non-small cell lung cancer (mNSCLC) ranged from 17-26 months¹⁻³
- Observed median OS in “real-world” studies ranges from 8-12 months⁴⁻⁵
- We sought to define median OS of patients with mNSCLC who received IO as monotherapy or in combination with chemo as first-line therapy at Levine Cancer Institute (LCI).

Methods:

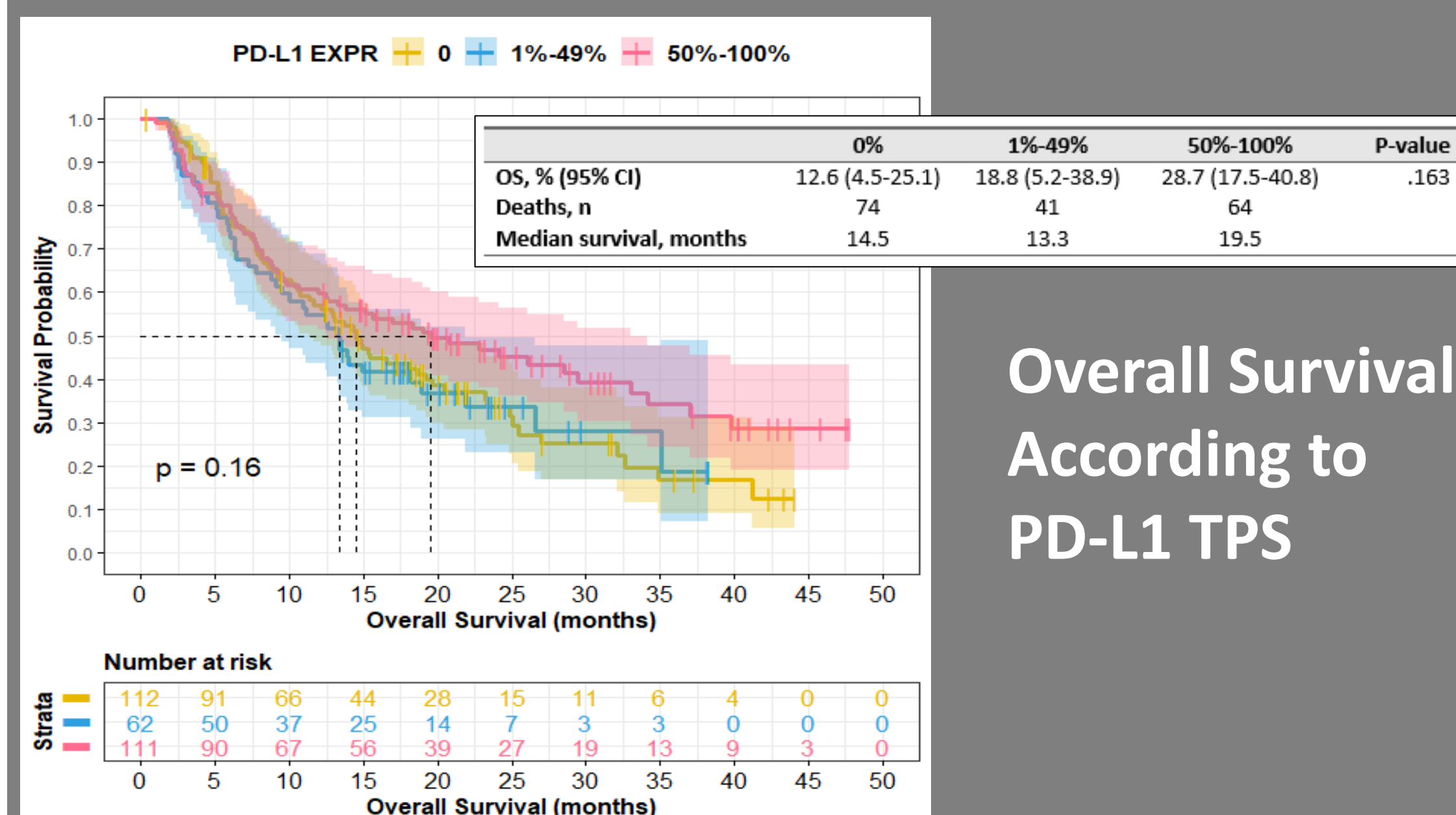
- We retrospectively reviewed 315 adult patients with mNSCLC without driver mutations (EGFR, ALK, ROS1) who were diagnosed between 2016-2019
- The Kaplan-Meier method was used to estimate and compare OS between IO and IO + chemotherapy
- Univariate and multivariate Cox models were used to evaluate risk factors for OS
- Risk factors considered included age, sex, race, smoking status, histology, first-line treatment type, and metastatic sites

Results:

- Population characteristics:
 - 40% female, 77% white, 20% Black, 34% current smokers and 60% former smokers
 - Median age: 69 years (45-88) in patients receiving IO alone and 63 years (28-84) in pts receiving IO + chemo
 - Tumor types: 76% adenocarcinoma and 17% squamous cell carcinoma
 - PD-L1 TPS: 39% were 0%, 22% were 1-49%, and 39% were ≥50%
 - Distribution of metastases: 10% adrenal, 40% bone, 30% brain, 14% liver, 31% lung
 - Median duration of IO received was 4.25 months (0 to 43.6)



Overall Survival According to Treatment Type



Overall Survival According to PD-L1 TPS

Results (cont):

- Median OS as stratified by PD-L1 TPS:
 - PD-L1 0%: 14.5 months
 - PD-L1 1-49%: 13.3 months
 - PD-L1 ≥50%: 19.5 months
- Median OS for patients receiving IO and IO + chemo as first line therapy was 17 and 14.8 months, respectively (P=.209)
- OS was significantly different between IO and IO + chemo after adjusting for age
- No OS differences were seen between white and Black patients
- No OS differences were seen between all patients versus those with brain metastases (brain-specific interventions not reviewed)

OS adjusted for age	Multivariate Model		
	HR	95% CI	P
First-line: IO vs IO+chemo	0.70	0.52-0.95	.022
Bone metastasis	1.53	1.14-2.04	.001
Liver metastasis	1.72	1.17-2.52	.006

Conclusions:

- Patients with mNSCLC treated first-line with IO either alone or in combination with chemo at LCI lived longer than those in similar “real-world” cohorts
- Median OS was highest in patients with PD-L1 TPS ≥50%, although not statistically significant
- While not unusual to identify worse outcomes in those with bone and liver metastases, interestingly brain metastasis was not associated with worse survival.
- In this cohort, when adjusted for age, IO alone trends toward improved survival.
- Although there was no OS difference based on race, further investigation will seek to uncover any other disparities contributing to outcomes, such as insurance status and zip code mapping.
- To our knowledge, this provides the largest analysis of this patient population outside of a clinical trial.

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