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Neoadjuvant Chemoimmunotherapy and Surgery for Resectable Locally Advanced NSCLC: A Single-Center Study with Intratumoral Bacterial Analysis

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Control #595

Background

- pCR and MPR are important early endpoints after neoadjuvant chemoimmunotherapy, but are only confirmed after resection.
- CT size change may underestimate response because residual masses can contain fibrosis, necrosis, and immune-cell infiltration.
- FDG-PET may provide a practical preoperative signal of treatment-induced biological response.

Objectives

1. Describe perioperative and pathological outcomes in routine practice
2. Evaluate whether $\Delta\text{SUV}\%$ predicts pCR/MPR
3. Establish a hypothesis for future intratumoral bacterial analysis

34 patients received neoadjuvant chemoimmunotherapy followed by surgery

Age		
Median	72(49-80)	
Distribution		
<70yr	14	41%
≥70yr	20	59%
Gender		
Male	25	74%
Female	9	26%
Histology		
Ad	15	44%
Sq	16	47%
Others	3	9%
Smoking status		
Current/former	29	85%
Never	5	15%

Tumor size		
Median	4.1 (0.8-8.7)	
LN metastasis		
N0	10	30%
N1	16	47%
N2	7	20%
N3	1	3%
Stage		
II A	7	20%
II B	14	42%
III A	9	26%
III B	4	12%
PD-L1		
<1%	12	35%
1-49%	9	26%
50-100%	10	30%
NA	3	9%

Clinical and pathological outcomes

N=34

ICI

Nivolumab	25	74%
Pembrolizumab	9	26%

irAE

Any grade	20	59%
Grade 3 or 4	4	12%

Surgical procedure

RATS	29	85%
VATS	2	6%
OPEN	3	9%

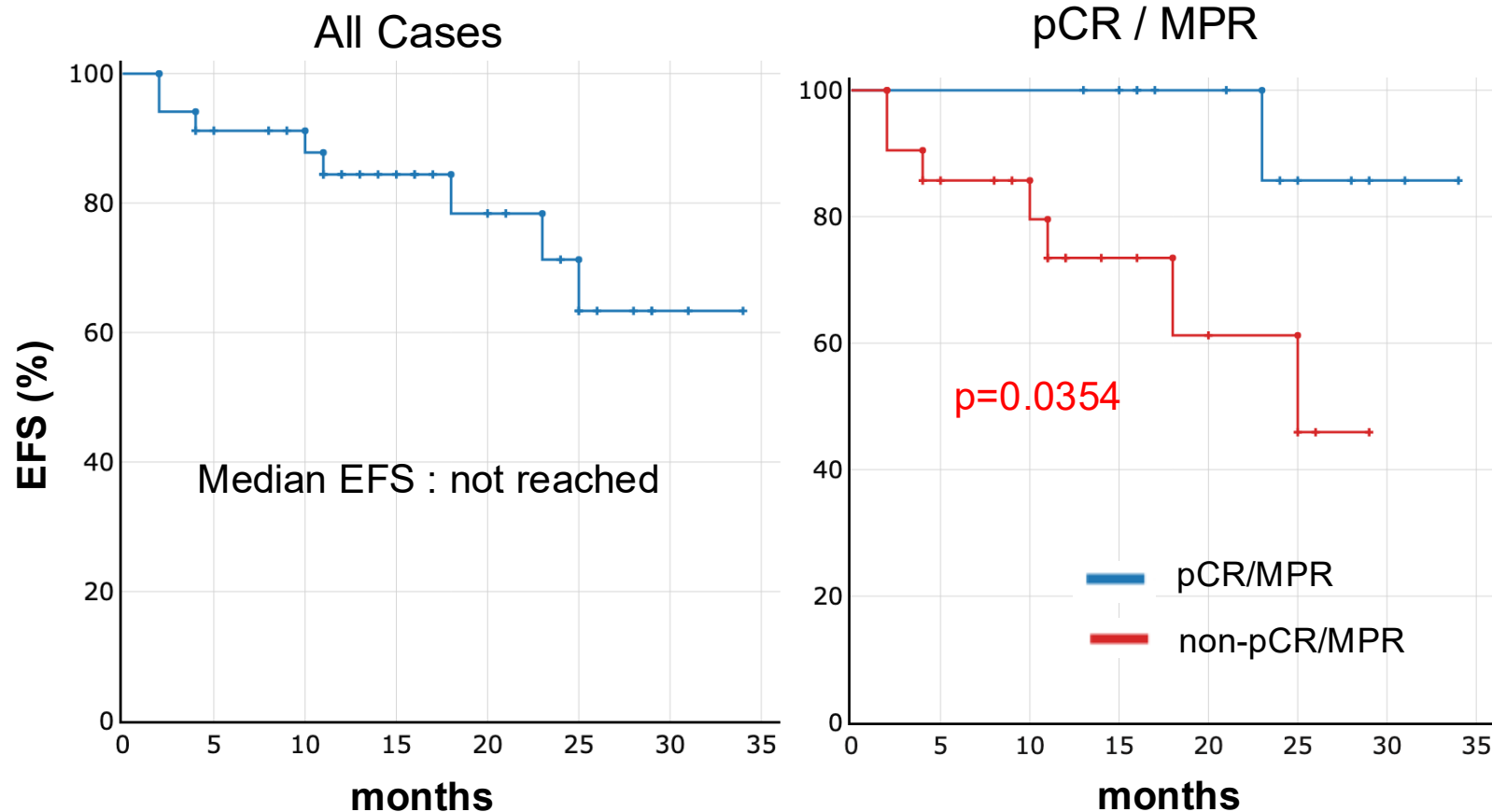
Treatment effect

pCR	8	24%
MPR without pCR	5	15%
MPR or better	13	38%
non-MPR	21	62%

Recurrence

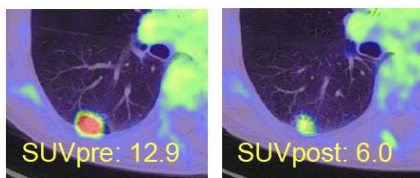
Ef.2-MPR	1	8%
non-pCR/MPR	5	24%

Event -free survival : EFS



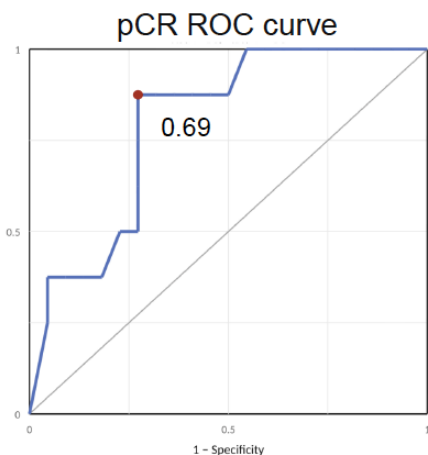
Association between $\Delta\text{SUV}\%$ and pathological response

$$\Delta\text{SUV}\% = \frac{(\text{SUV}_{\text{pre}} - \text{SUV}_{\text{post}})}{\text{SUV}_{\text{pre}}} \times 100$$



(Example)

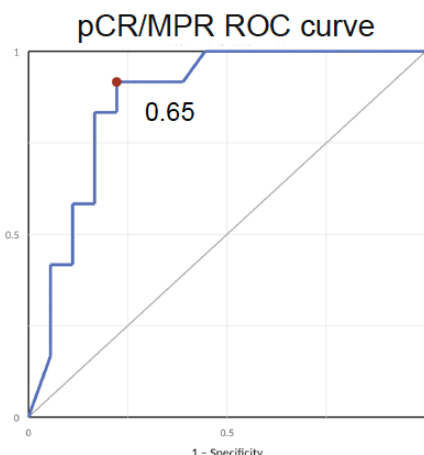
$$\Delta\text{SUV}\% = (12.9 - 6.0) / 12.9 \times 100 = 54\%$$



AUC 0.795 (95% CI 0.608–0.943)

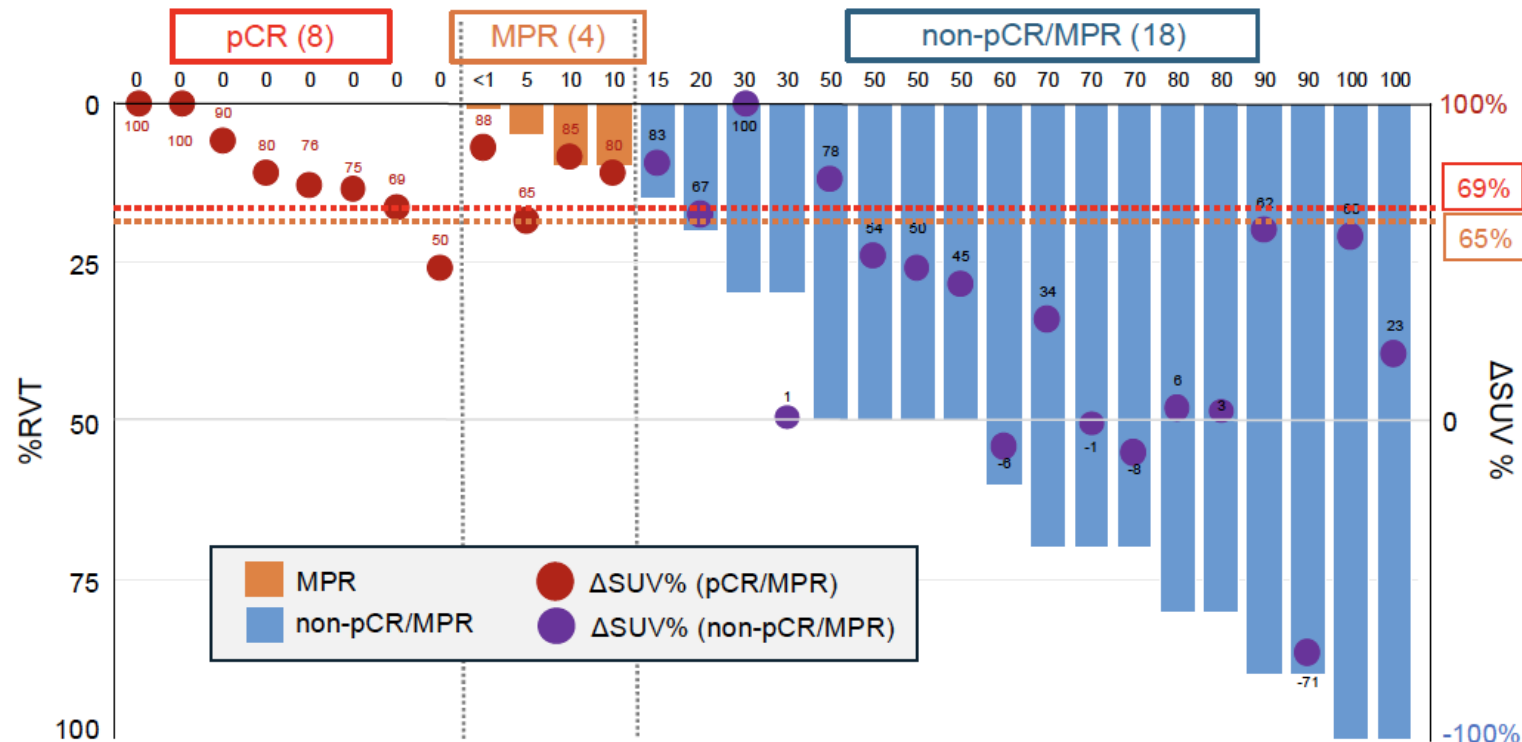
Exploratory
cutoff:

69%



AUC 0.868 (95% CI 0.719–0.981)

65%



Interpretation: a marked reduction in primary-tumor SUVmax was strongly associated with pathological response in the PET-evaluable cohort (N=30), but cutoffs remain exploratory.

Next translational analysis

Hypothesis

We hypothesize that tumors with high versus low metabolic response (Δ SUV%) harbor distinct intratumoral bacterial communities and spatial immune microenvironments.

Planned workflow

1. Stratify tumors by Δ SUV% response phenotype
2. Characterize intratumoral bacterial composition and spatial localization
3. Relate bacterial features to residual viable tumor and the immune microenvironment

Transparency statement

Intratumoral bacterial analysis has not yet been completed. No bacterial-composition result is presented in this E-Poster.

Conclusion

Neoadjuvant chemoimmunotherapy achieved meaningful pathological responses in resectable locally advanced NSCLC. A greater Δ SUV% was strongly associated with pCR/MPR and may serve as a practical preoperative response biomarker. Δ SUV%-defined phenotypes will provide the basis for our future intratumoral microbiome analysis.

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