An immune-based score for the prediction of clinical outcome in patients with metastatic non-small cell lung cancer treated with first-line immunotherapy

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Conclusions
The clinical outcome of monotherapy with IT in mNSCLC is variable. Our immune-based score may give a good stratification of the clinical benefit of IT. It could be helpful in clinical practice to identify those pts who might benefit from more intensive therapeutic approaches, such as first-line CT-IT, or to de-intensify treatment in those pts who experience long and durable responses. Further validation in wider, prospective trials is, however, needed in order to implement it in our clinical practice.

Background
First-line treatment for metastatic non-small cell lung cancer (mNSCLC), unless of oncogene-driven treatments in patients whose tumours are oncogene-addicted, is mainly based on immunotherapy (IT) and chemo-immunotherapy (CT-IT). Even if such treatments did revolutionize the treatment landscape, responses may be variable and the understanding of the patient’s prognosis at baseline is crucial and might be important for more tailored treatments.

Methods
We tested several immune-based biomarkers in all patients starting a first-line treatment with IT at our centre.

Considering 4 biomarkers of sensitivity to IT
1) high serum levels of interleukin-2
2) high serum levels of interleukin-6
3) low serum levels of tumour necrosis factor-alpha
4) low CD4/CD8 ratio

We identified three subgroups:
1) pts with no biomarkers of sensitivity to IT at baseline
2) pts with 1 or 2 biomarkers
3) pts with 3 or 4 biomarkers

For these three groups we calculated the overall survival from the start of the first-line treatment with the Kaplan-Meier method.

Results
We included 97 pts. All of them had a PD-L1 expression equal or higher than 50% and were then eligible for IT monotherapy. 95 pts received pembrolizumab, whereas only 2 pts were treated with atezolizumab. 25 pts were in group 1, 32 in group 2, and 40 in group 3. We observed a statistically significant difference in the median overall survival in the three groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>mOS (95% CI)</th>
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<tbody>
<tr>
<td>1</td>
<td>6.84 mos (4.71-8.97)</td>
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<tr>
<td>2</td>
<td>12.3 mos (11.37-13.18)</td>
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<tr>
<td>3</td>
<td>20.3 mos (17.59-23)</td>
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</tbody>
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log-rank p < 0.001