Clinical outcomes of NSCLC patients (pts) who had brain-only metastasis at time of Stage IV diagnosis, by presence versus absence of EGFR/ALK mutations (#1144)

S. Schmid1,2,3, L. Zhan1, M. Garcia1, S. Cheng1, K. Khan1, M. Chowdhury1, A. Sabouhanian1, J. Herman1, P. Wallia1, E. Strom1, M. C. Brown1, W. Xu1, F.A. Shepherd1, A.G. Sacher1, N. B. Leigh1, P.A. Bradbury1, D. Shultz1, G. Liu1.

1Princess Margaret Cancer Centre, University of Toronto, 2Cantonal Hospital St.Gallen, Switzerland, 3University of Berne, Switzerland

Results

Background

• The brain is one of the most common sites of metastasis in non-small-cell lung cancer (NSCLC)

• In patients (pts) with oligometastatic disease an aggressive treatment approach with radical treatment of all metastatic sites has been increasingly investigated

• A recent Meta-Analysis of 7 trials exclusively in NSCLC pts suggested improved survival outcomes for local consolidative therapy in pts with oligometastatic disease. Benefit was similar in pts with EGFR-mutation compared to the wildtype population

• Treatment strategies and outcomes in pts with brain-only metastatic (m) NSCLC are not well understood.

Methods

• The primary objective of the study was to describe real-world treatment strategies, metastatic failure patterns and outcomes of patients with NSCLC and brain only metastasis at diagnosis of stage IV disease.

• Clinico-demographic, treatment & survival data were collected retrospectively for all mNSCLC pts, years 2014-2016, at Princess Margaret Cancer Centre and detailed analysis focused on pts who had brain-only metastasis at time of initial Stage IV diagnosis

• Pts were grouped into two cohorts: NSCLC wildtype (NSCLCwt) and NSCLC with an ALK/EGFR mutated (NSCLCmut+).

• Patterns of failure during follow-up were stratified into 4 groups: Brain Progressions Only, Systemic Progression only, Systemic and Brain Progression, no progression event prior to last follow-up.

• Univariate and multivariate Cox proportional-hazard models were used to explore associations between local treatment to the primary tumor and overall survival in pts with de-novo brain-only metastasis, controlling for prognostic factors determined a priori: age, sex, cohort (NSCLCwt vs NSCLCmut+), systemic treatment within 4 months of diagnosis, and number of brain lesions at stage IV diagnosis (1-2 vs. >2)

Table 1. Patient demographics of pts with brain only-mets compared to overall cohort

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Category</th>
<th>Overall cohort</th>
<th>Brain only</th>
<th>Systemic only</th>
<th>Brain and systemic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at stage IV</td>
<td>Median (Q1-Q3)</td>
<td>69.2 (66-73.7)</td>
<td>69.2 (67-74.7)</td>
<td>69 (66-73.2)</td>
<td></td>
</tr>
</tbody>
</table>

Results

Table 1. Patient demographics of pts with brain only-mets compared to overall cohort

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Total N</th>
<th>Median (Q1-Q3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>218</td>
<td>69.2 (66-73.7)</td>
</tr>
<tr>
<td>Brain only</td>
<td>45</td>
<td>69.2 (67-74.7)</td>
</tr>
<tr>
<td>Systemic only</td>
<td>16</td>
<td>69 (66-73.2)</td>
</tr>
<tr>
<td>Brain and systemic</td>
<td>157</td>
<td>69.2 (67-74.7)</td>
</tr>
</tbody>
</table>

Figure 1: Type of metastatic progression depending on Histology and Mutation Status

Figure 2: Median Overall survival (OS) by cohort

Figure 3: Median OS depending on whether their primary tumor was treated (blue line) or not (red line): overall cohort (top), in NSCLCwt (below A) and NSCLCmut+ (below B)

Conclusion

• We observed significant differences in metastatic failure patterns depending on mutational status: patients with NSCLCmut+ were more likely to develop systemic metastases during the course of their disease compared to patients with NSCLCwt.

• Furthermore, local treatment of the primary tumor was not associated with improved survival in patients with NSCLCwt, however a significant OS-benefit was observed in patients with NSCLCmut+.