Factors associated with first line chemotherapy use in patients with hormone receptor positive, HER2 negative metastatic breast cancer – data from the PRAEGNANT breast cancer registry

Crimean-Kiev virus (CMV) recently became available in Germany. This new antiviral agent has shown promising results in clinical trials, but its efficacy and safety in real-world settings are still under investigation. CMV-infected patients have a higher risk of developing CMV-related complications and severe outcomes. Therefore, early diagnosis and management are crucial.

BACKGROUND
For breast cancer patients with metastases which are not suitable for initial surgical treatment, first-line chemotherapy is recommended. Treatment recommendations vary based on tumor characteristics and the regional availability of new agents. CMV-infected patients are at higher risk due to the increased immunosuppression associated with CMV infection. The aim of this study was to investigate the impact of CMV infection on the treatment outcomes of breast cancer patients in Germany. The study aimed to identify factors that influence first-line chemotherapy use and to assess the impact of CMV infection on overall survival.

STUDY DESIGN AND METHODS
The PRAEGNANT study (NCT03361828) is a prospective, multi-center, observational study that included patients with hormone receptor positive, HER2 negative breast cancer. The primary objective was to evaluate the real-world treatment patterns in this specific patient population. Data were collected from the PRAEGNANT network, which consists of more than 300 contributing centers across Germany. The study included patients who started first-line chemotherapy within a specified time frame. The end points of interest were overall survival, progression-free survival, and the use of chemotherapy.

RESULTS
Patient characteristics and chemotherapy use

Expectedly, patients with brain metastases and patients with a high grading of the primary tumor had an unfavorable prognosis concerning overall survival. Chemotherapy use was also associated with an unfavorable prognosis (Hazard Ratio: 2.09; 95%CI: 1.19-3.76). A detailed distribution of the four therapy options is shown in Table 1. Chemotherapy use already decreased before the availability of CDK4/6i. After the introduction of CDK4/6 inhibitors, chemotherapy use further decreased, indicating a shift towards targeted therapies.

<table>
<thead>
<tr>
<th>Chemotherapy Use</th>
<th>Data Collection Period</th>
<th>Overall Survival</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemotherapy</td>
<td>2014-2017</td>
<td>41.5% (17)</td>
<td>0.71 (0.21, 2.45)</td>
</tr>
<tr>
<td>Antihormone</td>
<td>2014-2017</td>
<td>27.5% (11)</td>
<td>0.46 (0.24, 0.87)</td>
</tr>
<tr>
<td>Both</td>
<td>2014-2017</td>
<td>12.5% (5)</td>
<td>0.04 (0.02, 0.10)</td>
</tr>
<tr>
<td>None</td>
<td>2014-2017</td>
<td>6.5% (3)</td>
<td>0.01 (0.00, 0.08)</td>
</tr>
</tbody>
</table>

A detailed distribution of the four therapy options is shown in Figure 1. Chemotherapy use has almost halved from before the introduction of CDK4/6i to after 2015. A multivariate Cox model including kind 1st line of therapy (chemotherapy vs. AH based therapies) analyzed predictors of overall survival. Besides site of metastases, grading of the primary tumor and the year in which the therapy was started (Table 2), other factors such as ECOG class, concomitant diseases, and chemotherapy given concomitantly were considered.

CONCLUSION
The usage of chemotherapy can be predicted with age, metastasis pattern and grading. Further therapy change was observed after the introduction of CDK4/6i. The use of chemotherapy as 1st line therapy for HR+ HER2- patients has decreased significantly. A detailed list of factors that influence chemotherapy use and overall survival is shown in Table 2. Overall survival according to chosen therapy

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