

Reasons For Failure To Give Adjuvant Chemotherapy In Early Breast Cancer - Interactive Visual Analysis Of Clinical Data With The TourGuide Software

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Background

Complex clinical data is challenging to analyze, especially when a variety of data types and heterogeneous, real-world data are involved.

As part of the TourGuide project (FFG #851460) we created a visual, web-based tool for this task.

With it, we aimed to identify factors that lead to patients with breast cancer forgoing chemotherapy in a real-world setting.

Materials and Methods

We used the Calumma and Ordino software to analyze 1,549 patients from the Kepler University Hospital's tumor database in settings where neoadjuvant or adjuvant chemotherapy is typically necessary: triple-negative or Her2-positive tumors >5mm (groups 1 and 2), or ER-positive, Her2-negative, nodal-positive tumors (group 3).

Factors that were associated with the non-receipt of chemotherapy were identified with visualization (Figure 1) and assessed with Ordino's "touring" feature (Figure 2) that supports analysts in generating and confirming hypotheses.

Results

In group 1 (triple negative tumors >5mm), factors for forgoing chemotherapy were, in patients >=65, age (Enrichment-Score [ES] 13.723, p<0.001) and marital status (adjusted Rand-index [RI] 0.106, p=0.019). Tumor grading showed up on visualization but was not significant (p=0.080).

In group 2 (Her2 positive tumors >5mm), factors in older (i.e., >=65 years) patients were T-stage (RI 0.059, p=0.023), age (ES 14.062, p<0.001), type of surgery (RI 0.034, p=0.095; not significant). There were no factors in younger patients.

In group 3 (Her2 negative, ER positive, nodal positive tumors), factors in older patients are grading (RI 0.047, p=0.039), age (ER 26.336, p<0.001) and nodal-status (RI 0.045, p=0.074) and in younger patients, T-stage (RI 0.071, p<0.001) and grading (RI 0.038, p=0.012).

Conclusions

Visual analysis of clinical data helped to identify factors for treatment decisions that may not be immediately obvious.

Note: The software that was used to make the findings is described in the abstract "TourGuide: Interactive Visual Analysis of Clinical Oncology Data".

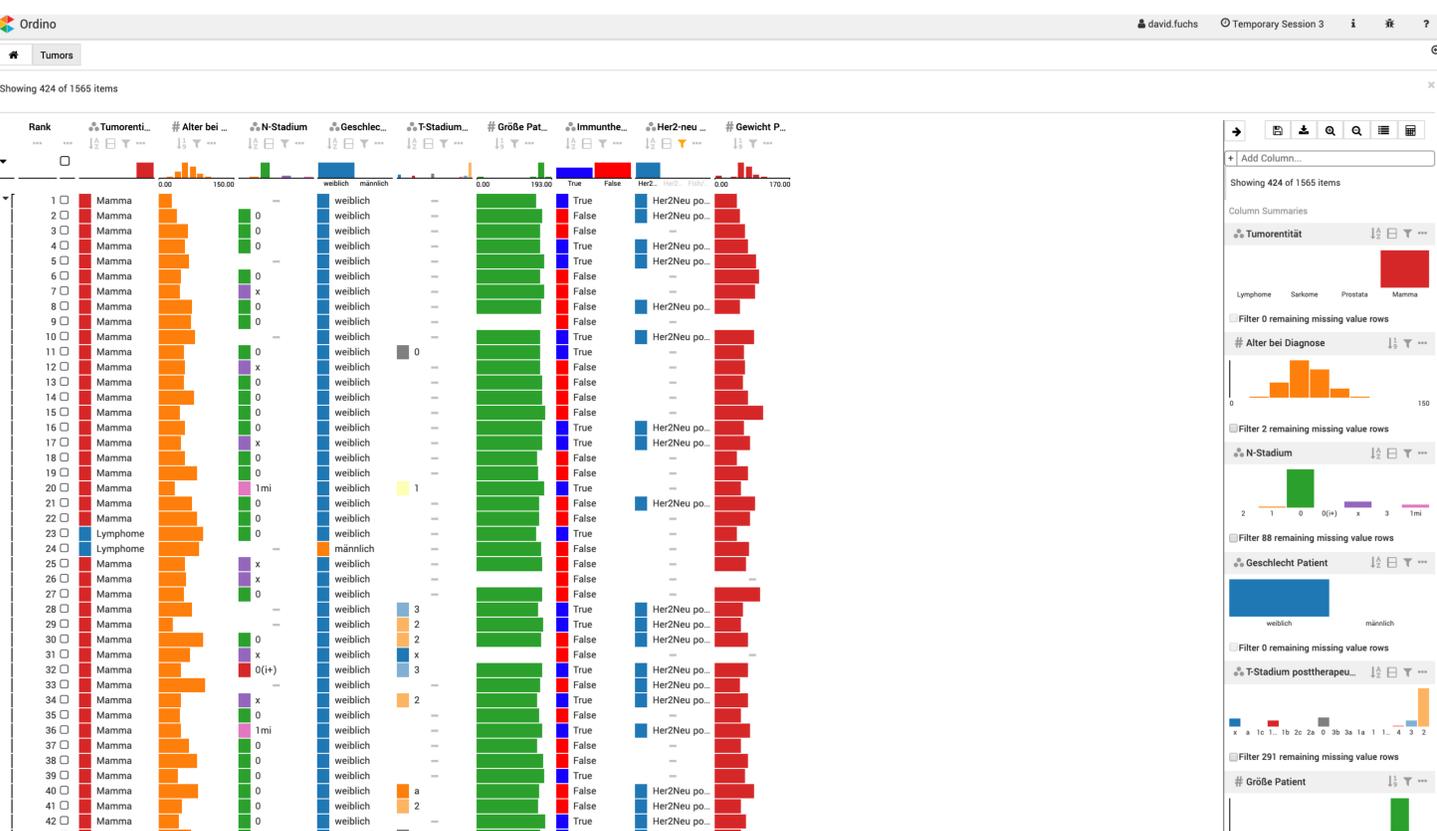


Fig. 1: Ordino's visualization view showing patients with Her2 positive tumors

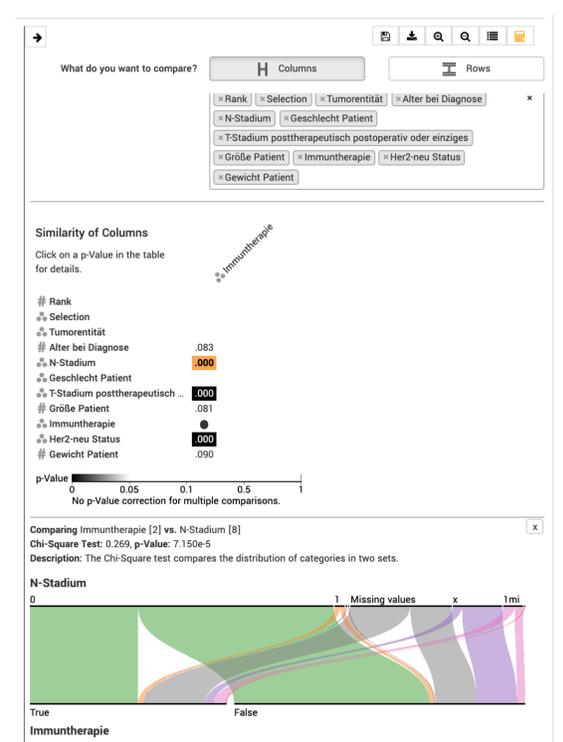


Fig. 2: "Touring" view with real time statistics and visualization