Pretherapeutic patient specific drug selection in gastric cancer using microtumors

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State of the art

- Therapeutic guideline recommendations are based on clinical trials of large patient cohorts
- Individual tumor characteristics are not considered
- Predicitive biomarkers for drug selection are not recommended in the guidelines outside of clinical trials

Conclusions

- Treatment options of the palliative setting are also effective in the perioperative situation
- Targeted therapies should be considered in the perioperative treatment
- In addition to Trastuzumab other molecular drugs (e.g. Cetuximab) are effective in individual tumor samples
- Opposite to guideline statements, Cisplatin-based therapies are more effective compared to Oxaliplatin- as well as Irinotecan-based therapies
- In vitro drug testing of the original patient tumor facilitates the treatment selection

Chemotherapeutic recommendations according to the guidelines (S3 and others)

Perioperative treatment

Monotherapy: none

Combination therapy:

- 5-Fluorouracil + Cisplatin (5FU + Cis)
- 5-Fluorouracil + Cisplatin + Epirubicin (5FU + Cis + Epi)
- 5-Fluorouracil + Oxaliplatin (5FU + Ox)
- 5-Fluorouracil + Oxaliplatin + Epirubicin (5FU + Ox + Epi)

Molecular / targeted therapy: none

Palliative treatment

Monotherapy:

- 5-Fluorouracil (elderly patients only)

Combination therapy:

Perioperative treatment options and in addition:

- 5-Fluorouracil + Cisplatin + Docetaxel (5FU + Cis + Doc)
- 5-Fluorouracil + Oxaliplatin + Docetaxel (5FU + Ox + Doc)
- 5-Fluorouracil + Irinotecan (5FU + Iri)
- 5-Fluorouracil + Irinotecan + Epirubicin (5FU + Iri + Epi)
- 5-Fluorouracil + Irinotecan + Docetaxel (5FU + Iri + Doc)

Molecular / targeted therapy:

- 5-Fluorouracil + Cisplatin + Trastuzumab (5FU+Cis+Tras)
  (Her2/neu IHC Score 3; Her2/neu IHC Score 2 and FISH positive)

Second line treatment

Monotherapy:

Palliative treatment options and in addition:

- Irinotecan

Combination therapy:

Palliative treatment options and in addition:

- Irinotecan + Mitomycin C

Molecular / targeted therapy:

Palliative treatment options

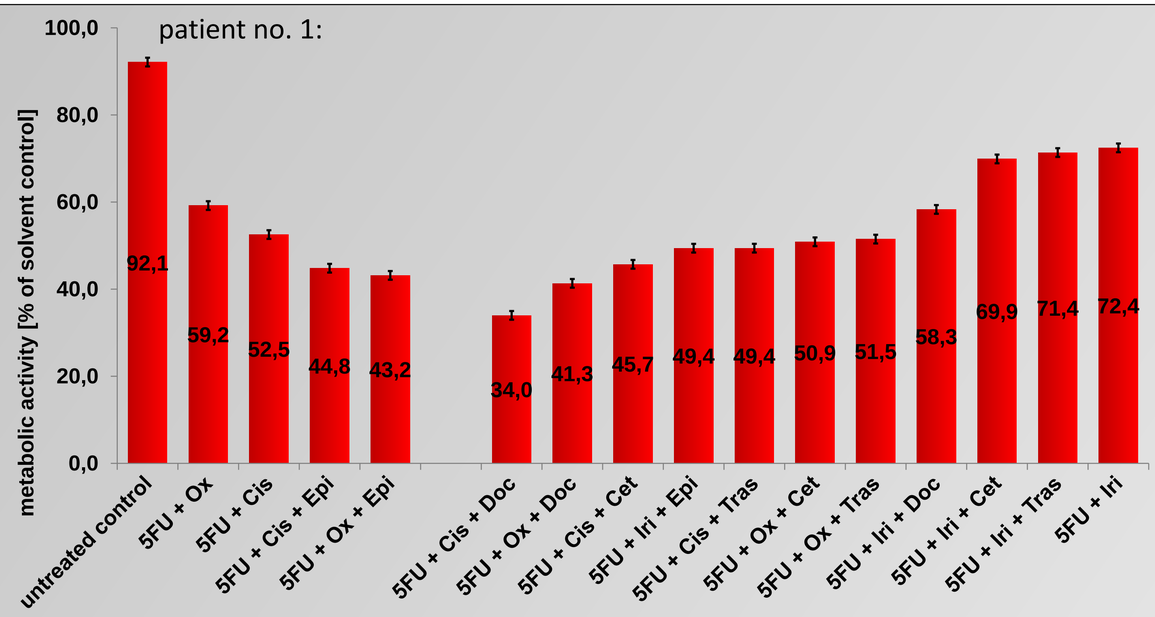
Rationale

Which is the most effective treatment option for the individual patient?

Process / Methods

- Required material: 4-6 tumor biopsies
- Preparation of microtumors in vitro for 48 hours
- In vitro chemotherapeutic treatment for 48 hours
- ATP assay to determine therapeutic efficacy
- Availability of treatment findings within 7 days

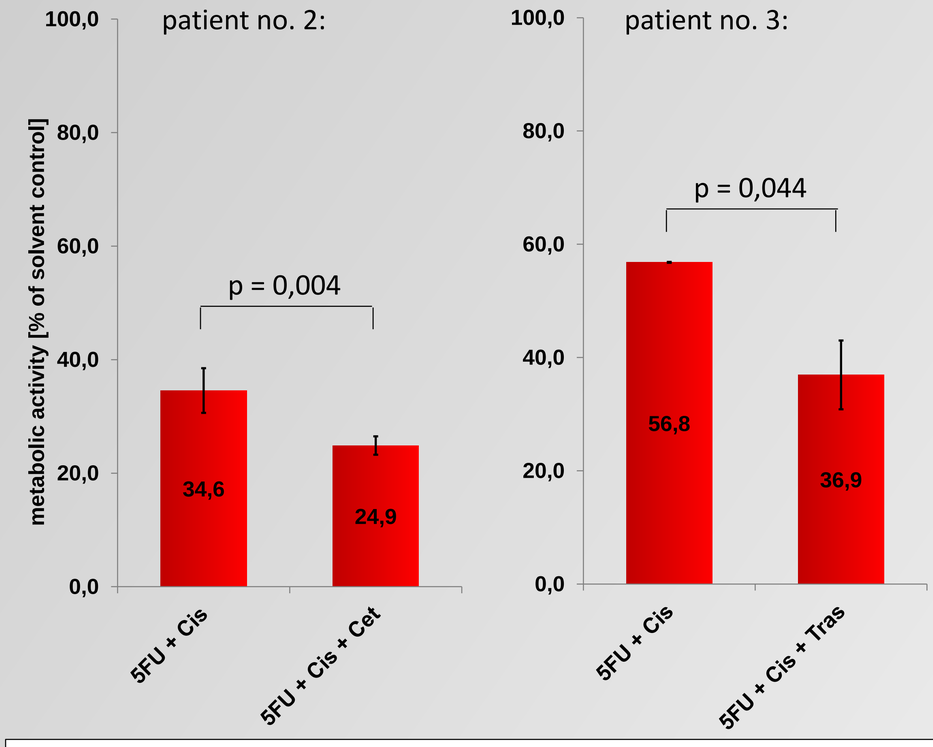
Palliative treatment options tested in the perioperative setting



8 of 13 patients (62%) show the strongest effect to one of the standard perioperative treatments

5 of 13 patients (38%) might benefit more from a therapy of the palliative setting

Antibody therapies tested in the perioperative setting



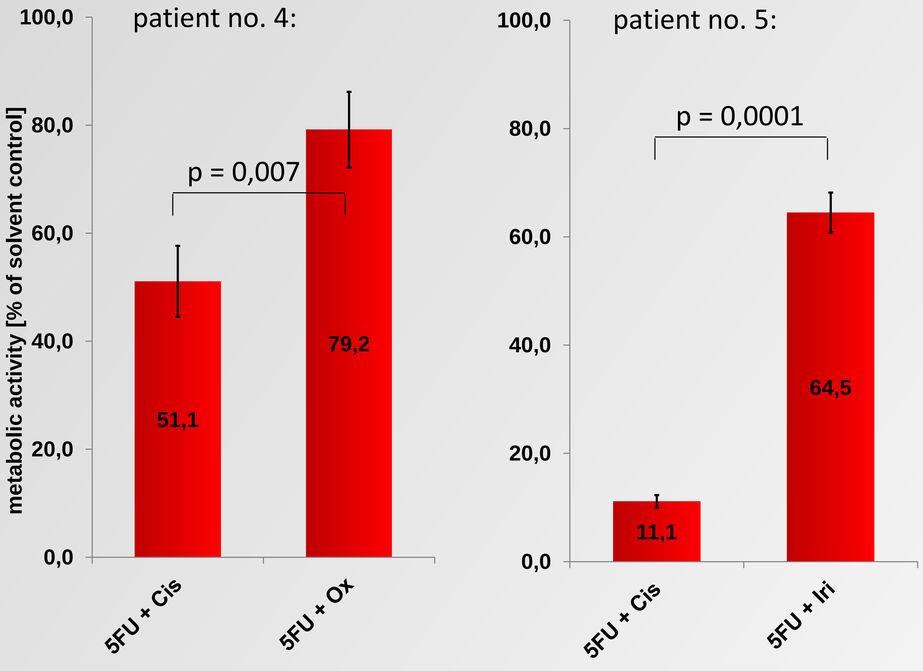
addition of Cetuximab:

no. of patients	more effective	no benefit	less effective
n = 12	3 (25%)	7 (58%)	2 (17%)

addition of Trastuzumab:

no. of patients	more effective	no benefit	less effective
n = 12	1 (8%)	11 (92%)	0 (0%)

Comparison of Cisplatin vs. Oxaliplatin and Cisplatin vs. Irinotecan



Oxaliplatin vs. Cisplatin:

no. of patients	more effective	no benefit	less effective
n = 12	0 (0%)	4 (33%)	8 (67%)

Irinotecan vs. Cisplatin:

no. of patients	more effective	no benefit	less effective
n = 10	0 (0%)	0 (0%)	10 (100%)

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