Halfway review seminar

Resection of colorectal liver metastases
– impact of preoperative chemotherapy

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Abstract

Background:

Approximately 25 % of patients with colorectal cancer will develop liver metastases. Surgical resection of metastases offers a potential cure and is often combined with perioperative chemotherapy. Perioperative chemotherapy has been shown to prolong recurrence free survival and the response of metastases to preoperative chemotherapy provide important prognostic information after liver resection. However, chemotherapy can induce liver parenchymal damage and deteriorate patient physical performance status, which might be mediated by reduced muscle mass, which in turn can increase postoperative morbidity and mortality. Perioperative identification of liver parenchymal damage and evaluation of patient performance status are of great importance.

Aim:

The aim of the thesis is to evaluate methods for perioperative assessment of the liver parenchyma and study the effects of preoperative chemotherapy for colorectal liver metastases on patient muscle mass, the liver parenchyma and the metastases.

Methods:

In study 1 and 2 we investigated two novel methods that potentially could be used to identify liver parenchymal damage in the setting of liver resection. In study 1 we used Side-stream darkfield imaging, a microscope for in vivo visualization of blood perfusion in the liver sinusoids. In study 2 we examined the liver and spleen before and after liver resection using ultrasound elastography.

In study 3 we evaluated changes in patient skeletal muscle mass as a marker of physical performance status in patients undergoing preoperative chemotherapy.

In study 4 we aim to evaluate if changes in magnetic resonance diffusion parameters can predict the chemotherapeutic response in metastases and patient long-term survival before changes in size of the metastases occurs.

Preliminary results:

Both intraoperative assessment of liver microcirculation using Side-stream darkfield imaging and perioperative liver and spleen ultrasound elastography can be used to monitor changes to the liver parenchyma after liver resection and Side-stream darkfield imaging can potentially detect liver parenchymal damage.

Patient skeletal muscle mass decreases during preoperative chemotherapy. Preoperative low muscle mass results in a worse overall survival after resection of metastases.
Clinical significance:

Early identification of favorable and unfavorable effects of preoperative chemotherapy can help clinicians optimize treatment planning and initiate protective measures for patients at risk of morbidity and an adverse long-term prognosis.

Publications:

Study 1

Study 2

Study 3