Case-matched comparison of survival after cytoreductive surgery and intraperitoneal hyperthermic chemoperfusion for peritoneal carcinomatosis versus liver resection for metastatic colorectal cancer

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OBJECTIVE
To estimate potential benefit of underutilized specialized treatment for peritoneal carcinomatosis by comparing survival benefit against recognized benefit from treatment of metastatic colorectal carcinoma (mCRC) with liver metastases.

RATIONALE
• Cytoreductive surgery combined with peritoneal hyperthermic chemoperfusion (CS-HIPEC) is an emerging option for patients with peritoneal carcinomatosis from metastatic colorectal cancer (mCRC)1-3.
• Conduction of further surgical randomized trials has proven unfeasible3. On the other hand, the survival benefit derived from liver resection for mCRC is well recognized. Both resection of liver metastases and CS-HIPEC are considered regional therapies. Therefore we compared the outcome of CS-HIPEC to the known benefit in patients resected for liver metastases from mCRC.

METHODS
• All consecutive patients with peritoneal carcinomatosis from mCRC treated by CS-HIPEC at our institution in 2001-2006 were included.
• Hyperthermic perfusion of peritoneal cavity with 40 mg of mitomycin C for 100 minutes was performed after surgical cytoreduction4.
• The control group was frequency matched 1:4 for age, gender and tumor grade (n=228) and consisted of patients undergoing colorectal and liver resection for mCRC. These cases were extracted from the Surveillance, Epidemiology, and End Results Program5.
• Overall survival was the primary end-point (Fig. 1).

RESULTS
• 62 procedures were performed in 57 patients. Initial systemic chemotherapy was performed in all but one patient in the CS-HIPEC group.
• Both groups were well matched with similar age (52.9 ± 11.6 years in control versus 52.6 ± 12.1 in HIPEC patients, p = 0.840) and tumor grade (93 cases with grade III among controls and 26 among HIPEC patients, p = 0.562). Controls were derived from SEER database, and therefore all were initially staged as IV, see Figure 2.
• Median survival was 28.0 months in the control group versus 25.8 months in CS-HIPEC group (p=0.624). One, 2, and 3-year survival was 78, 53, and 36% in the controls versus 84, 55, and 39% in the CS-HIPEC group (Figure 3).
• A sensitivity analysis including CS-HIPEC cases initially presenting with synchronous peritoneal carcinomatosis (n=22) showed that survival estimator curves remained identical (p=0.793).

CONCLUSIONS
Survival benefit in patients undergoing CS-HIPEC is comparable to that derived from liver resection for mCRC. This evidence further supports the role of cytoreductive surgery and hyperthermic chemoperfusion in the treatment of patients with peritoneal carcinomatosis of colorectal origin.

BIBLIOGRAPHY
5. NCI SEER Program 2007 Data submission. www.seer.cdc.gov