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Cytoreductive surgery and hyperthermic intraperitoneal chemotherapy for peritoneal carcinomatosis from colorectal cancer

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Key words: Colorectal Neoplasms; Peritoneal Neoplasms; Surgical Procedures, Operative; Hyperthermia, Induced; Chemotherapy, Cancer, Regional Perfusion; Combined Modality Therapy; Antineoplastic Combined Chemotherapy Protocols; Treatment Outcome; Survival Rate; Quality of Life; Prognosis

Peritoneal carcinomatosis was considered a terminal condition. Natural history studies showed that median survival was 6 months. The current chemotherapy improved this poor prognosis with overall survival attaining 24 months. A relatively new locoregional approach has evolved combining cytoreductive surgery with hyperthermic intraperitoneal chemotherapy. The aim was to analyze results of this treatment, survival prognostic factors and results of treatment of recurrences.

A Medline search over 1990- 2010 was performed for relevant publications concerning peritoneal colorectal carcinomatosis treated with surgery and intraperitoneal chemohyperthermia.

Cytoreductive surgery was complete in 84% of patients. Mortality ranged from 0% to 12%. Overall morbidity ranged from 25% to 44%. Overall median survival varied from 28 to 60 months. Five year overall survival ranged from 20% to 49%. Prognostic factors were PCI, lymph node status, completeness of cytoreduction, number of hepatic metastases, adjuvant systemic chemotherapy. Recurrence rate after optimal cytoreduction was 64% to 65%. Patients who underwent repeated surgery for recurrence in absence of extra abdominal metastases had a better survival.

Cytoreductive surgery with hyperthermic intraperitoneal chemotherapy should be considered as the gold standard in the treatment of colorectal carcinomatosis because it increases long-term survival rate in selected patients with an acceptable postoperative morbidity and mortality. Recurrence after optimal cytoreduction remains an important problem. Repeated surgery may increase long-term survival in selected patients.

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Peritoneal surgery and HIPEC

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Peritoneal carcinomatosis is a relatively frequent situation in the natural history of colorectal cancer and is associated with a dismal prognosis. There are few studies published on the nature of carcinomatosis of colorectal origin.

Average survival in patients with colorectal carcinomatosis without treatment was 5.2 months (1), 6 months (2), and 9 months (3).

Although 5-FU only induced complete responses in 10% of patients, with an average survival between 9 and 12 months, and 3-year survival was only 5% (4).

The combinations of 5-FU/LV with oxaliplatin or irinotecan are currently the most active treatments available in advanced colorectal cancer and average survival is up to 24 months (5,6).

In the worldwide multicenter study with "Sugarbaker's protocol", average survivals of 32.4 months were achieved when complete cytoreductions were carried out (7).

In the study of the Verwaal VJ et al, in the group with complete macroscopic cytoreduction and intraperitoneal chemohyperthermia the average survival was 42.9 months (8). Sugarbaker's group has reported an average survival of up to 60 months in a selected group of patients in which complete control of the macroscopic disease was obtained. Elias et al. reported an average survival of up to 60 months and 50% of 5-year survival (9).

Cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) provide a promising combined treatment strategy for selected patients with peritoneal carcinomatosis that can improve patient survival and quality of life. The extent of intraperitoneal tumor dissemination and the completeness of cytoreduction are the leading predictors of postoperative patient outcome.

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