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Rationale for intraperitoneal chemohyperthermia and cytoreductive surgery.

Chemo-hyperthermia (CHIP) is used to treat intraperitoneal carcinomatosis of several origin. In this setting, the molecular effects of drugs like oxaliplatin and hyperthermia, in combination or alone, are determinant in ovarian and colon cancer cells. Oxaliplatin inhibited growth of all cell lines in a dose-dependent manner. The efficacy of the drug is markedly enhanced by concurrent exposure to mild heat of 42°. In IGROV-1 cells, a low concentration (15 microg/ml) of oxaliplatin in combination with hyperthermia induced a transient G2/M arrest. In both colon carcinoma cell lines, a G1/S arrest with a reduction of the G0/G1 population occurred. Results of in vitro studies suggest that hyperthermia and oxaliplatin might induce antiproliferative effects by modulating the expression of cell cycle regulatory proteins through different signalling pathways.

Cytoreductive surgery performed at the time of the CHIP is extremely important as it has been demonstrated that the effect of CHIP reach the centre of tumour deposit of less than 3mm. Furthermore in the majority of reports published to this date, complete cytoreduction is the most important prognostic factor for these patients. Cytoreductive surgery attempts to remove all macroscopic visible tumor with comprehensive visceral resections and peritonectomy procedures, stripping involved portions of the peritoneum. As a result of these important data about the management of peritoneal carcinomatosis from colorectal cancer, only patients with complete cytoreduction may be eligible for CHIP. Therefore selection of the patients are mandatory. Currently non-invasive methods (CT and PET scans) fail to accurately assess the extent and potential resectability of the disease because they rely on tumour volume density and typically PC has a low volume density. Direct visualization is the only reliable method to assess tumour load. Therefore, some patients undergo an explorative laparotomy and if the disease is found to be unresectable the procedure is stopped. In this regard, laparoscopic evaluation of resectability of the peritoneal carcinomatosis could be useful. Using this technique, patients with a high tumour load could be spared an unnecessary laparotomy.

Finally combination of two aggressive locoregional therapeutic approaches can increased morbidity and mortality rates. Study reported morbidity and mortality rates of more than 30% and 2%, respectively, with 10% of digestive fistula.

The CHIP remains confined to a minimum numbers of oncology department. Although, new therapeutic approach as anti-angiogenic agents may challenge this high technicity and morbidity approach.