Castro J et al., Surgery Curr Res 2012, 2:5
http://dx.doi.org/10.4172/2161-1076.S1.010

OMICS Group Conferences
Accelerating Scientific Discovery

International Conference and Exhibition on
Surgery, Anesthesia & Trichology

November 26-28, 2012 Hilton San Antonio Airport, USA

Detection of circulating cancer cells in blood from a patient with peritoneal carcinomatosis treated with cytoreductive surgery and intraperitoneal chemotherapy

Castro J[1], Ericsson C[2], Cashin P[3] and Mahteme H[3]
[1]Department of Oncology-Pathology, Karolinska Institutet and Hospital, Sweden
[2]Department of Laboratory Medicine, Karolinska Institutet, Sweden
[3]Department of Surgical Sciences, Uppsala University, Sweden

Background: Patients with peritoneal carcinomatosis (PC) from colorectal cancer have a poor prognosis. Aggressive treatments by cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) offer a cure in selected patients with PC. However, in the great majority of patients the disease will recur in liver or lung. The underlying cause for recurrence could be the existence of circulating cancer cells (CTCs) in PC patients prior to or at the time of CRS and HIPEC. There is a need for new cell-surface marker independent techniques to detect and isolate CTCs. We decided to try one such new technique, developed by Liquid Biopsy, and made available to us as a pre-production model. This method isolates both EpCAM positive and EpCAM negative CTCs potentially detecting a wider, more representative, sample of cells than samples restricted to certain known cell surface markers (Lab Chip, 2011, 11, 375).

Methods: This report focuses on a PC patient treated by CRS and HIPEC. The patient presented with PC from caecal cancer. Prior to CRS and HIPEC, the patient was treated with neoadjuvant chemotherapy. CTCs were isolated from peripheral blood preoperatively, at one week and one month after CRS and HIPEC using the novel marker independent method (Liquid Biopsy, patent pending). Conventional soluble serum tumour markers were also taken and analysed at the same time as the CTCs.

Findings: The preoperative level of CTCs was 25 cells/5 ml blood. One-week post CRS and HIPEC, CTCs level was 21 cells/5 ml blood and one-month after CRS and HIPEC no CTC cells could be detected in 5 ml blood. Serum tumour marker analysis of preoperative CEA showed 5.8 (ref <3.8 ug/L), and CA72-4 was >600 (ref <6.9 KE/L). One week post CRS and HIPEC, CEA was normalised (1.6) and CA72-4 was significantly reduced to 31.1.

Interpretation: It appears that CTCs can be detected successfully in peritoneal carcinomatosis opening up the possibility to study the molecular characteristics of these CTCs. CTC numbers are also seen to drop to undetectable levels following radical surgery. Thus the occurrence and characteristics of CTCs in blood have the potential to assist decision making when considering treating patients with postoperative adjuvant systemic chemotherapy.

christer.ericsson@ki.se