Hyperthermic Chenotherapy Intra-Abdominal Laparoscopic Approach: Effectiveness and Safety in Development Porcine Model

Primary Author: Francisco Javier Redondo MD, PhD
General University Hospital, Ciudad Real. Medicine Faculty of Ciudad Real, Spain.

Co-Authors: David Padilla, MD, PhD; JosÃ© Manuel PÃ©rez, PhD; JosÃ© RamÃ­n MuÃ±oz-RodrÃ­guez, PhD; Juan Luis Santiago, MD; Miguel Angel De la Cruz-Morcillo, PhD; Natalia Bejarano, MD, PhD; Omar Montenegro, MD, PhD; Patria Faba, MD; Pedro Villarejo, MD, PhD; Sergio SÃ

BACKGROUND: Hyperthermic intraperitoneal chemotherapy (HIPEC) is an effective treatment for patients with peritoneal carcinomatosis (PC). Laparoscopic surgery is safety treatment and it is performed in patients with peritoneal carcinomatosis from different sources, which low tumor volume. HIPEC management by laparoscopic approach after cytoreductive surgery completed locoregional treatment of PC, and may be feasible and safe after appropriate patient selection.

METHODS: Development of an experimental model of HIPEC by laparoscopic approach, with CO2 recirculation. Porcine Model consists of 6 mini-pigs (35-38 Kg), operated by cytoreductive surgery (pelvic and paraaortic lymphadenectomy) with laparoscopic approach. Laparoscopic CO2 recirculation-HIPEC was performed using laparoscopic access for input and output catheters (Paclitaxel 175mg/m2 for 60 minutes at 42Â°C was used). The variables analyzed were blood gases, hemodynamic parameters (PiCCO2Â© system) and temperature; they were analyzed at different surgery times: 1. At start of surgery (T1); 2. During surgery (T2) 3. Pre-HIPEC (T3); 4. Intra-HIPEC (T4); 5. Post-HIPEC (T5).

RESULTS: No statistically significant differences were observed in blood gases, hemodynamic parameters in the experimental phase (Figure 1).

CONCLUSIONS: Cytoreductive surgery and CO2-HIPEC administration by laparoscopic approach is a safe and feasible technique in porcine model and might be feasible and safe after appropriate patient selection.

Figure 1. A) Hemodynamic Parameters (Cardiac Index, GEDI, RVSI and SVV) B) Gasometrics parameters (pH, pCO2, pO2, HCO3)