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Title: MONITORING OF BRAIN OXYGENATION DURING HYPERTHERMIC INTRAPERITONEAL CHEMOTHERAPY (HIPEC) PROCEDURES

Erwin De Troy, Cathy De Deyne, Kurt Vanderspeeten, Frank Jans and René Heylen.
Department of Anaesthesia & Abdominal Surgery, Ziekenhuis Oost-Limburg, Genk, Belgium.

Background and Goal of Study: (required): Hyperthermic intraperitoneal chemotherapy (HIPEC) with intraperitoneal administration of chemotherapy at a temperature of 41.5° has been demonstrated to improve survival for pts with colorectal peritoneal carcinomatosis. As far as today, no data are available on cerebral oxygenation during these rapidly induced increases in body temperature. Therefore, we applied cerebral oximetry, enabling cerebral oxygenation monitoring, during HIPEC procedures.

Materials and Methods: (required): In 8 pts, scheduled for HIPEC procedure, non-invasive cerebral oximetry was applied over the patient's forehead, enabling bilateral brain saturation monitoring. The Fore-Sight monitor is a newly available, near-infrared spectrometer that measures absolute cerebral tissue oxygen saturation (SctO₂ %). In all pts, between 15 and 45

min of HIPEC (41.5°) procedure was performed. Changes in SctO₂ over time were referred to changes in body temperature.

Results and Discussion: (required): We observed a large variation in changes in body temperature during (and after) HIPEC procedure, with a mean body temperature increase of 2.3° (highest observed body temperature between 35.6° and 38.3° within m15min after start of HIPEC). Mean SctO₂ before HIPEC start was m66% (62% - 73%). During HIPEC, SctO₂ immediately decreased, reaching the lowest SctO₂ values (- m6.3%) at m23min after start of HIPEC procedure. In 2 pts, important decreases were observed (> 10% decrease) with final SctO₂ values below 60%. In both pts, baseline SctO₂ values were lower than for the other 6 pts and in both pts, HIPEC procedure lasted for 45min. There was, however, no clear relationship between the extend of SctO₂ decrease and the extend of body temperature increase. After HIPEC procedure, SctO₂ values exceeded baseline values by a mean of 7.3% after a mean of 53min after HIPEC stop. In none of the pts, any major systemic change occurred during HIPEC procedure, thereby eliminating any possible (other) systemic influence on SctO₂ monitoring.

Conclusion(s): (required): This is the first preliminary report on non-invasive, absolute cerebral oxygenation monitoring during HIPEC procedures, where rapid increases in body temperature may be induced. These rapid increases in body temperature may result in mismatches in cerebral perfusion to cerebral metabolism ratio, possible inducing inadequacy of cerebral perfusion. However, more data are required to elucidate the relationship between rapid increases in body temperature and adequacy of cerebral perfusion, as monitored by cerebral oximetry.