HIPEC: IL POST-OPERATORIO

Dott. V. Trapasso

IL POST-OPERATORIO

Ricovero in ICU:

- **Monitoraggio emodinamico**
- **Weaning e prevenzione complicanze respiratorie**
- **Gestione del dolore**
- **Prevenzione tossicità chemioterapica**
- **Gestione coagulazione/ profilassi anti-trombotica**

Egyptian Journal of Anaesthesia (2013) 29, 311–318

Egyptian Society of Anesthesiologists

Egyptian Journal of Anaesthesia

www.elsevier.com/locate/egja
www.sciencedirect.com

Research Article

The perioperative course and anesthetic challenge for cytoreductive surgery with hyperthermic intraperitoneal chemotherapy

Jehan M. Kamal [a,*], Somaya M. Elshaikh [a], Dina Nabil [a], Ahmad M. Mohamad [b]

Table 5 Early postoperative complication.

Type of complication	Number of patients (total 13)
Inotropic support	4
Tachycardia	11
Arrhythmia	1
Heart failure	1
Fever	12
Reintubation and ventilation	2
Pneumonia	3
Pulmonary embolism	1
Pleural effusion	3
Renal impairment	0
Liver impairment	7
intestinal leak	1
Platelet dysfunction	0
Death	2

MONITORAGGIO EMODINAMICO:

COSA SI PERDE?

- Fluid loss:più di 4000 ml/die nelle prime 72 ore ,40% proveniente dai drenaggi chirurgici

-1000 ml/24h dal SNG fino al 6° giorno

-Perdite proteiche (700 g/die)

-Perdite ematiche (300-500 ml)


REVIEW

CURRENT OPINION

Anesthetic management in patients undergoing hyperthermic chemotherapy

Christoph Raspe[a], *Pomipilu Piso*[b], *Christoph Wiesenack*[c], *and Michael Bucher*[a]

Volume 25 • Number 3 • June 2012

Anaesthesia
Journal of the Association of Anaesthetists of Great Britain and Ireland

Anaesthesia, 2008, **63**, pages 389–395 doi:10.1111/j.1365-2044.2007.05380.x

Peri-operative anaesthetic management of cytoreductive surgery with hyperthermic intraperitoneal chemotherapy

C. Schmidt,[1] M. Creutzenberg,[1] P. Piso,[2] J. Hobbhahn[3] and M. Bucher[4]

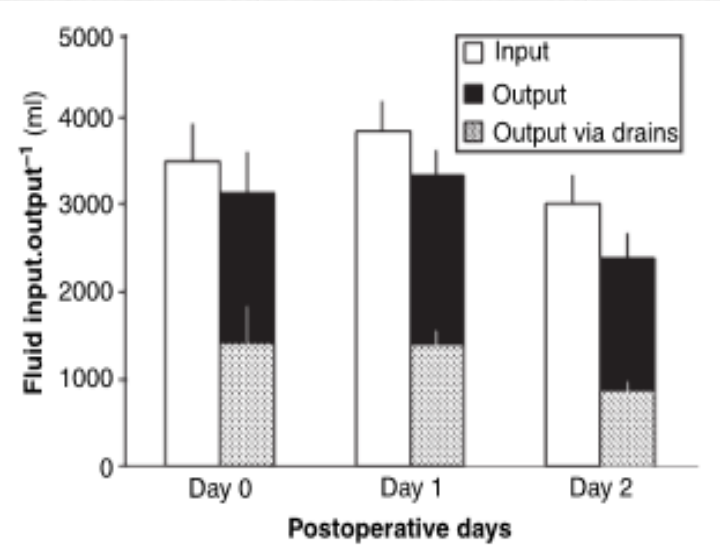

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Table 4 Laboratory parameters in 78 patients undergoing cytoreductive surgery and HIPEC. Data are expressed as mean (SD).

	Pre-operative values	Intra-operative values	Postoperative values Day 1	Postoperative values Day 2	Postoperative values Day 3
Antithrombin III; %	70 (4)	39 (3)*	48 (4)*	66 (6)	51 (5)*
Platelets; $10^9.l^{-1}$	346 (17)	205 (16)*	237 (15)*	244 (18)*	279 (23)*
INR	0.96 (0.02)	1.39 (0.05)*	1.21 (0.03)*	1.12 (0.04)*	1.01 (0.04)
aPTT; s	31.5 (1.2)	45.2 (3.1)*	49.7 (3.3)*	43.6 (3.2)*	39.2 (3.4)
Haemoglobin; $g.dl^{-1}$	12.9 (0.3)	9.4 (0.3)*	9.8 (0.3)*	9.5 (0.3)*	9.6 (0.3)*
Haematocrit; %	37.2 (0.8)	27.3 (1.0)*	28.1 (0.8)*	26.7 (0.8)*	27.7 (0.9)*
Serum albumin; $g.l^{-1}$	42.6 (4.8)	15.7 (2.2)*	19.6 (1.2)*	20.5 (2.5)*	23.6 (1.6)*
Serum creatinine; $\mu mol.l^{-1}$	73.0 (3.5)	71.3 (4.4)	76.6 (6.2)	73.9 (7.0)	75.7 (7.9)

INR, international normalised ratio; aPTT, activated partial thromboplastin time; *$p < 0.05$ vs pre-operative values.

MONITORAGGIO EMODINAMICO:

COME SI REINTEGRA?

Monitoraggio stretto delle perdite e del turnover per i primi 3 giorni

- **3500/4000 ml circa (cristalloidi e colloidi) nel primo giorno**
  - **Colloidi : 1000-1200 ml nei primi due giorni del post-operatorio**
  - **(Amidi idrossietilici di terza generazione, Voluven, HES 130/0.4…)**
- **Emazie concentrate raramente necessarie**
- **Piastrine raramente necessarie**
- **Plasma fresco congelato**

ALBUMINA: management

Journal of Surgical Oncology 2009;100:297–301

Perioperative Management of Patients With Cytoreductive Surgery for Peritoneal Carcinomatosis

C. SCHMIDT, MD,[1]* S. MORITZ, MD,[1] S. RATH, MD,[1] E. GROSSMANN, MD,[1]
C. WIESENACK, MD, PhD,[1] P. PISO, MD, PhD,[2] B.M. GRAF, MD, PhD,[1] AND M. BUCHER, MD, PhD[1]

patients is still unknown and requires further evaluation. We prefer a restrictive regime and substitute albumin only in the case of a profound decrease of albumin plasma levels (<15 mg/dl) and the transfusion of fresh frozen plasma is restricted to patients with a clinical evident bleeding disorder.

ALBUMINA: management

Egyptian Journal of Anaesthesia (2013) 29, 311–318

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mained low postoperatively. Albumin was given to all patients to keep serum albumin above 3.0 g/dl and to compensate for fluid losses and excess abdominal fluid rich protein drained.

POSSIBILI COMPLICANZE RESPIRATORIE:

- TRALI
- Versamento pleurico/EPA
- Atelettasie>>> rischio polmonite!!


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TRALI:

Transfusion Related Acute Lung Injury - Danno polmonare acuto associato alla trasfusione

Si definisce come TRALI l'insorgenza di ALI durante o entro le 6 ore dalla trasfusione di uno o più emocomponenti in pazienti che non abbiano manifestato ALI prima della trasfusione.

La mortalità media per TRALI è tra il 9 e il 15%.

Nei pazienti critici con necessità di trattamento intensi
arrivare al 41%.

Gajic O, Rana R, Winters JL, et al. Transfusion-related acute lung injury in the critical ill: prospected nested case control study. Am J Respir Crit Care Med 2007; 176: 886-891.

PREVENZIONE ATELETTASIE:

- Estubazione rapida
- Controllo del dolore
- CPAP

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EFFETTI FISIOLOGICI DELLA CPAP A LIVELLO POLMONARE

- Evita il collasso degli alveoli aumentando la CFR
- Recluta regioni polmonari perfuse ma non ventilate
- Migliora la ventilazione alveolare riducendo l'effetto shunt
- Contrasta l'eventuale penetrazione plasmatica nell'alveolo (edema polmonare) con ridistribuzione dell'edema dalle zone peri-alveolari a quelle peri-bronchiali
- Diminuisce il Lavoro respiratorio
- Migliora gli scambi gassosi

GESTIONE DEL DOLORE POST-OPERATORIO

Pazienti colpiti frequentemente da dolore cronico, pessima qualità di vita e tolleranza agli oppioidi

Gold standard:

- **Posizionamento catetere peridurale a livello toracico (T4-T8)**
- **Uso combinato di anestetici locali e oppioidi**

CATETERE PERIDURALE:

- Accorcia la durata ventilazione meccanica
- Riduce l'uso di oppioidi endovenosi nel
- ileo paralitico

associated with a reduced intra-operative need for opioids and postoperative ventilation. Forty-one per cent of patients with an epidural could be extubated in the operating theatre and 13% were transferred directly to the ward after the PACU. All the patients without an epidural were transferred intubated and ventilated to the ICU. In

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Peri-operative anaesthetic management of cytoreductive surgery with hyperthermic intraperitoneal chemotherapy

C. Schmidt,[1] M. Creutzenberg,[1] P. Piso,[2] J. Hobbhahn[3] and M. Bucher[4]

Ann Surg Oncol (2012) 19:4244–4251
DOI 10.1245/s10434-012-2496-y

Annals of
SURGICAL ONCOLOGY
OFFICIAL JOURNAL OF THE SOCIETY OF SURGICAL ONCOLOGY

ORIGINAL ARTICLE – GASTROINTESTINAL ONCOLOGY

Perioperative Management of Patients Undergoing Cytoreductive Surgery Combined with Heated Intraperitoneal Chemotherapy for Peritoneal Surface Malignancy: A Multi-Institutional Experience

John C. Bell, FRCA, FFICM, Barnaby G. Rylah, FRCA, MRCP, Robert W. Chambers, FRCA, Helen Peet, FRCA, MRCP, Faheez Mohamed, MD, FRCS, and Brendan J. Moran, MCH, FRCS

COMPLICANZE (RARE!!)

- **EMATOMA PERIDURALE**

Per i disturbi della coagulazione spesso presenti (preferibile eseguire da mano esperta)

- **ASCESSO**

Per il rischio immunosoppressivo causato dall'HIPEC

(lasciare in sede il catetere per circa 7 giorni (2-12) e controllarlo quotidianamente)

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National Centre for Pseudomyxoma Surgery, Basingstoke and North Hampshire Hospitals NHS Foundation Trust, Basingstoke, UK

- **Nessun report di ematoma peridurale**
- **Ascesso epidurale: 1: 2.139**

(diversamente dal rapporto di 1:47.000 riportato in un largo studio nazionale)

Br J Anaesth. 2009 Feb;102(2):179-90. doi: 10.1093/bja/aen360. Epub 2009 Jan 12.

Major complications of central neuraxial block: report on the Third National Audit Project of the Royal College Anaesthetists.

Cook TM[1], Counsell D, Wildsmith JA; Royal College of Anaesthetists Third National Audit Project.

PREVENZIONE TOSSICITÀ CHEMIOTERAPICA

Table 2. Chemotherapeutics used during hyperthermic intraperitoneal chemotherapy and possible chemotherapeutic-specific adverse effects

Chemotherapeutics	Adverse effects
Mitomycin C	Nephrotoxicity, pulmotoxicity
Cisplatin	Peripheral neuropathia, myelotoxicity
Doxorubicin	Cardiotoxicity (arrhythmia, cardiomyopathia), myelotoxicity
Oxyliplatin	Neurotoxicity (laryngeal/pharyngeal dysesthesia)
Irinotecan	Myelotoxicity

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PREVENZIONE TOSSICITÀ CHEMIOTERAPICA

OXALIPLATINO:

Può dare acidosi lattica, iperglicemia e iponatremia

CISPLATINO:

Può aggravare bassi livelli di magnesio, culminando in aritmie cardiache e nefropatia

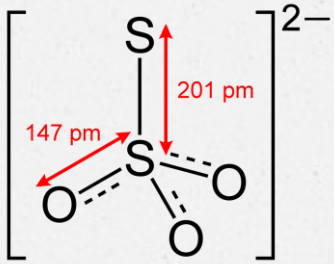
CONTROLLARE GLI ELETTROLITI!!

Surg Oncol Clin N Am 21 (2012) 533–541

Anesthesia Considerations During Cytoreductive Surgery and Hyperthermic Intraperitoneal Chemotherapy

Kenneth P. Rothfield, MD[a,b,*], Kathy Crowley, CRNA[a]

SODIO-TIOSOLFATO



- **Profilassi della nefropatia da Cisplatino**: 9 g per m^2 di superficie corporea in bolo, seguiti da una infusione continua di 1,2 g/m^2/ora per 6 ore.
- Nella profilassi della nefropatia da cisplatino, Sodio Tiosolfato si concentra selettivamente nelle urine dove si forma un complesso tiosolfato-cisplatino non tossico per le cellule, sane o malate. Lo stesso meccanismo di azione (formazione di un complesso tiosolfato-cisplatino) è alla base dell'attività come desensibilizzante nello stravaso di medicinali chemioterapici.
- Effetti indesiderati: nausea, vomito, diarrea, ipotensione (se infuso troppo velocemente), ipovolemia, sensibilizzazione locale, bruciore.

THE GOAL:FASTER RECOVERY. REHABILITATION AND RETURN TO THE PSYCHOSOCIAL FUNCTIONS

In this study, drinking, eating, regaining bowel functions and mobilisation usually occurred during 11 days after surgery. Furthermore, the patients experienced nausea, which

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the Journal of Cancer Surgery
ELSEVIER
EJSO 37 (2011) 897–903
www.ejso.com

Factors influencing early postoperative recovery after cytoreductive surgery and hyperthermic intraperitoneal chemotherapy

E. Arakelian [a,*], L. Gunningberg [a,b,c], J. Larsson [d], K. Norlén [a], H. Mahteme [a]