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## ICU Volume 5 - Issue 3 - Autumn 2005 - News and Innovations

### Products, Companies and Research

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#### Website

#### ESA

[www.euroanesthesia.org](http://www.euroanesthesia.org)

#### ISICEM

[www.intensive.org](http://www.intensive.org)

#### Maquet

[www.maquet.com](http://www.maquet.com)

#### SIRS-Lab

[www.sirs-lab.com](http://www.sirs-lab.com)

#### BIOSITE® Inc.

[www.biosite.com](http://www.biosite.com)

#### Zoll

[www.zoll.com](http://www.zoll.com)

#### ESA Poster Awards

There were three awards for abstracts at Euroanaesthesia this year. The full abstracts are available in the European Journal of Anaesthesiology, volume 22, supplement 34, 2005.

#### Fish Oil Could Prove Cost-Effective for Intensive Care

Dr Heller and colleagues from University Hospital Carl Gustav Carus in Dresden won first prize for their research into the impact of omega-3 fatty acids on mortality and length of hospital stay in severely ill patients (see page 28 in this issue of **ICU Management**).

#### Visual Processing During Anaesthesia

Dr Rieck and colleagues from the University of Cologne won an award for their research into functional imaging of the visual cortex during wakefulness and intravenous propofol/remifentanyl anaesthesia. In a study using functional magnetic resonance imaging (fMRI), funded by Koln Fortune (66/2001), they studied eight patients and four wakeful subjects. The researchers provided visual stimuli to the subjects and activation of the visual cortex was assessed using the fMRI technique and the software tool BrainVoyager 2000. They concluded that early visual information processing is preserved during general anaesthesia induced by the intravenous anaesthetics propofol and remifentanyl. The fMRI method may be appropriate for further studies into the effect of different anaesthetics on various neuronal networks.

#### Avoiding Systemic Inflammation with Esophagectomy

Dr Michelet and colleagues from Hopital Sainte Margeurite won their award for researching the effect of a protective ventilation strategy on systemic inflammation after esophagectomy. In a prospective, randomised study with 50 patients undergoing esophagectomy, they compared two ventilator strategies on the systemic peri-operative pro-inflammatory response. The groups were differentiated by tidal volume of 9ml kg<sup>-1</sup> during two and one lung ventilation, no positive end-expiratory pressure (PEEP) (control group) and 9ml kg<sup>-1</sup> during two-lung ventilation and 5ml kg<sup>-1</sup> during OLV PEEP 5cmH<sub>2</sub>O (intervention group). Successive arterial blood samples were collected for analysis after induction of anaesthesia and following surgery. They concluded that the protective ventilatory strategy lead to a decrease in peri-operative systemic pro-inflammatory response for these patients.

#### ISICEM Poster Awards

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This year at ISICEM, there were three poster awards relevant to management in intensive care. Brief descriptions are included here below and the full abstracts can be found in Critical Care Volume 9, Supplement 1, March 2005 (<http://ccforum.com>).

#### **Reducing Morbidity and Hospital Stay with Higher Risk Surgery**

The study of Dr Pearse and colleagues from St George's hospital in London evaluated the effect of an early goal directed therapy (EGDT) protocol commenced immediately after high risk surgery and showed reduced morbidity and length of hospital stay. High-risk surgical patients on a general ITU were randomized to conventional treatment (n=60) or EGDT (n=62) for 8 hours immediately following surgery. The goals for EGDT were to optimize volume status by maximizing stroke volume with fluid challenges and then to increase the oxygen delivery index (DO<sub>2</sub>I) to 600 ml/min/m<sup>2</sup> with dopexamine, if required. Control group patients received fluid guided by central venous pressure. There were no significant differences between the two groups at baseline. The EGDT group developed fewer complications (0.7 vs 1.5 per patient, p = 0.002) and had a shorter median duration of hospital stay (11 days vs 14 days, p = 0.001). Fewer patients in the EGDT group developed infectious complications (18 patients [29%] vs. 30 patients [50%]; p=0.03).

#### **Bleeding Control in Severe Blunt Trauma**

Dr Rossaint and colleagues concluded an improved clinical outcome with rFVIIa (200 + 100 + 100 µg/kg) as an adjunctive therapy for control of bleeding in patients with severe blunt trauma, from a placebo-controlled double blind study. Total RBC transfusion was significantly reduced with rFVIIa relative to the placebo (estimated reduction of 2.6 total RBC units; 90% confidence interval). The need for massive transfusion was significantly reduced: 14% in rFVIIa-treated vs 33% in placebo group (P= 0.03). There were significant reductions in 48 hour requirements for FFP and platelets. Improved haemostasis was accompanied by a significant decrease in ARDS (5% of rFVIIa-treated vs 18% of placebo-treated patients (P=0.047), and also a significant decrease in risk of developing organ failure (either MOF or ARDS: 9% for rFVIIa-treated vs 25% for placebo-treated patients: p = 0.047).

#### **Prophylaxis of Contrast-Induced Nephropathy**

Dr Huber and colleagues in Munich compared the effects of acetylcysteine (A), theophylline (T), acetylcysteine + theophylline (A+T) and placebo (P) for 254 patients with impaired renal function in a randomized trial. Patients from all groups were comparable with regard to baseline creatinine, amount of contrast-medium and incidence of other risk factors. The incidence of contrast-induced nephropathy (CIN) was 6.5% in group A, 4.7% in group T, 10.6% in group A + T, and 16.1% in group P. Overall, the incidence was lower under prophylaxis (7.3%) than under placebo (16.1%; P = 0.0386). Patients of group T had a significantly lower incidence of CIN than patients under placebo (P = 0.0348), whereas neither group A nor group A + T had a lower incidence of CIN than group P. Compared with baseline, serum creatinine levels significantly increased after 48 hours in groups A, A+T and P, but there was no significant increase in group T. In patients with impaired renal function, theophylline significantly reduces the incidence of CIN, whereas acetylcysteine alone or in combination with theophylline was not effective.

#### **Maquet**

The latest version of MAQUET's SERVO-i ventilator introduces new features specifically for neonatal ICU patients (see figure 1), including nasal continuous positive airway pressure (Nasal CPAP) functionality, which can be used with a variety of patient interfaces. Additionally, a new Y-piece measurement sensor for all SERVO-i models allows near-patient measurements of pressure and flow with minimal dead space. Other new features which aim to improve clinical efficiency and safety in ICUs include:

- FiO<sub>2</sub> trend values can be stored and viewed
- Reference loops can be presented on the screen together with the current loop
- The patient circuit can be tested independently of the pre-use check
- Alarms for airway pressure upper limit can be muted
- Apnea alarm limit has been extended from 15 to 45 seconds.

#### **SIRS-Lab and BIOSITE® Inc.**

On 25th August SIRS-Lab and BIOSITE® Inc. announced their collaboration to develop diagnostics for sepsis. Under the collaboration, SIRS-Lab will provide access to selected biomarkers for sepsis. Biosite will then make antibodies to those selected targets using the Company's proprietary antibody development process, which combines immunization of mice and phage display to generate highly diverse libraries of Omniclonal® antibodies with high affinity and low cross-reactivity. The antibodies will be used to generate assays for the measurement of the selected biomarker targets in blood samples. Validated biomarkers will then be assessed for commercialization potential, with high-value markers added to Biosite's product development process.

#### **Zoll**

While manual CPR remains a front-line treatment of sudden cardiac arrest, even the best manual chest compressions only provide 30-40% of normal blood flow to the brain, and only 10-20% of normal blood flow to the heart. The ZOLL AutoPulse™ Non-invasive Cardiac Support Pump, as an adjunct to CPR efforts, can do chest compressions that humans can't possibly do, while circulating much more blood, more effectively, to the heart and brain.

- Two separate animal studies showed that the AutoPulse generated pre-arrest levels of blood flow to the heart and brain.
- An end-of-life human study showed the AutoPulse generated 33% greater coronary perfusion pressure (CPP) than manual CPR conducted by medical residents.

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