8th European Conference on Perfusion Education and Training

Saturday, 13th September 2008, Lisbon, Portugal

Lisbon Congress Centre
Centro De Congressos De Lisboa (CCL)

"Innovations in Perfusion"

PROGRAMME & ABSTRACTS
Programme

Moderators:
Ms. Carole Hamilton (Jettenburg, Germany)
Mr. Dalibor Zovko (Krapinske Toplice, Croatia)

09:00 - 9:15
Mr. Nuno Raposo
Welcome:
Perfusion in Portugal: the Big Picture

09:15 - 9:45  Keynote Speaker:
Mr. Alois Philipp
The Evolution of Rescue: Transport of Critically ill Patients with Extracorporeal Gas Exchange

09:45 - 10:00
Ms. Conny Nielsen
Transportable System: Accidental Hypothermia

10:00 - 10:15
Mr. Bradley Kulat
Optimizing Circuit Design Using a Remote Mounted Perfusion System

10:15 - 10:30
Dr. Emanuela Angeli
New Practice in Pediatric Cardiac Surgery Perfusion: the Experience with Dideco Kids D100 Neonatal Oxygenator

10:30 - 11:00
Dr. Andreas Becker
CAPIOX® FX: A New Generation of Oxygenators

11:00 - 11:30  Coffee Break
Introduction: Despite advances in mechanical ventilation therapy and critical care, mortality from severe respiratory or cardiopulmonary failure remains high. Transport of patients with severe cardiogenic shock as a result of acute myocardial infarction or unsuccessful cardiological intervention to advanced care referral centre is essential for the patient survival and is also associated with higher risks factors. Another group are patients requiring therapy for refractory acute respiratory distress syndrome (ARDS). Transport of these patients to specialized centres can sometimes only be safely carried out using extracorporeal assist systems, which help to minimize the risk during the unstable phase of transport. System configuration depends on the indication (isolated pulmonary failure versus combined cardiopulmonary failure) according to which a VV-ECMO, VA-ECMO or the arterio-venous pumpless extracorporeal lung assist (AV-PECLA) is necessary.

Methods: Between 10/2000 and 3/2007 PECLA was used in twenty patients suffering from severe ARDS (FiO\(_2\) 0.97 ± 0.01 and pCO\(_2\) 80 ± 15 mmHg). Between 3/2006 and 4/2008 the new mobile Extracorporeal Life Support system (ELS-System, Maquet Cardiopulmonary, Hechingen, Germany) was used in eighteen patients (Table.1). Four patients were in cardiogenic shock (MAP < 60 mmHg and Norephinephrine ≥ 1.0 µg/kg/min). Fourteen patients had both cardiac and pulmonary failure (pO\(_2\)/FiO\(_2\) 65 ± 14 and Norephinephrine ≥ 0.8 µg/kg/min). Percutaneous cannulation using Seldinger technique was performed without problems in all cases.

ELS (Extracorporeal Life Support): For the therapy of acute life-threatening diseases and transport of patients with severe refractory cardiopulmonary failure we developed a mobile hand-held extracorporeal assist system, known as the ELS-System. This is based on the Minimal Extracorporeal Circulation (MECC) system by Maquet and can be employed effectively and safely for transport via helicopter or ambulance. One of the system components is a multifunction carrying device which contains the oxygenator, a Rotaflow pump drive and a two liter oxygen gas cylinder with flow meter (FM 41L: 0-15 l/min, Dräger AG, Lübeck, Germany) as a gas supply for the oxygenator. The weight of the assembled multifunction carrying device is approximately 11 kg. The second component consists of a base plate with shoulder strap for carrying the centrifugal pump control system (16 kg). The complete system can be carried by one person and can be fixed easily to every standard stretcher in the helicopter or intensive care ambulance.
Table 1: Patient number (n), age, sex, transport distance between outlying hospital and referral centre and transport mode. Twenty-eight patients were transported by helicopter and 10 by intensive care ambulance. Interventional lung assist (iLA)

Results: Transport was uneventful in all cases, no technical problem occurred. In the PECLA-Group the assist time was $5.1 \pm 3.0$ days. Nine patients (45 %) survived. Patients with VA-ECMO were assisted for $3.9 \pm 2.9$ days with a hospital mortality rate of 44 %. The supported patients with VV-ECMO had a survival rate of 56 %. Assist time in this group was $7.3 \pm 5.8$ days. In four patients moderate complications (ischemia of lower limb, bleeding) occurred.

Conclusion: Hospitals lacking highly specialized extracorporeal gas exchange technology and experienced personal are limited in the treatment of these seriously ill patients. Our miniaturized extracorporeal assist system opens up the possibility of a safe interhospital transport to centres of advanced medical care.

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***Alois Philipp: 2008 Recipient of the Innovation Prize from the Bavarian prime minister, Dr. Günther Beckstein, for their transportable Emergency Life Support (ELS) System.