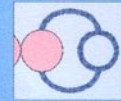




Mortality and recovery after inhalational compared to intravenous ICU sedation

Klinik für
Anaesthesiologie
St. Josef-Hospital

AG Inhalational Sedation



M. Bellgardt, A. Terporten, V. Peter, C. Sirtl, H. Vogelsang, H. Laubenthal, A. Meiser
Klinik für Anaesthesiologie, St. Josef-Hospital, Klinikum der Ruhr-Universität Bochum,
Gudrunstrasse 56, D-44791 Bochum; Email: martin.bellgardt@rub.de

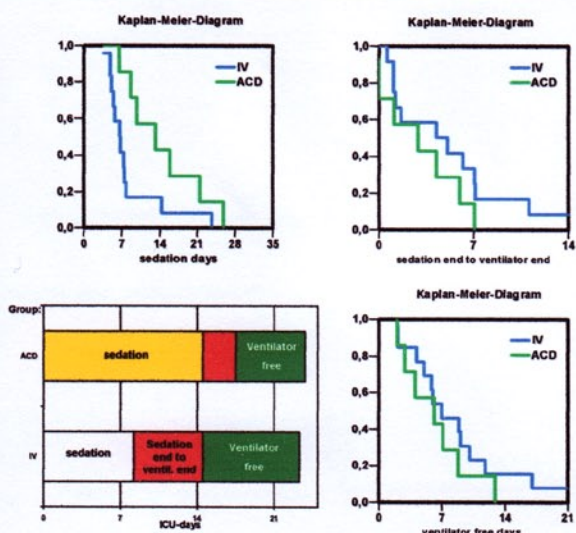
Background and Goal of Study

- The new anaesthetic conserving device (ACD) AnaConDa™ (Sedana Medical, Sweden) stores exhaled isoflurane or sevoflurane and resupplies it during the next inspiration similar to a heat and moisture exchanger¹.
- In our 10 bed ICU we sedated 43 patients with the ACD starting January 2004.
- Patients wake up faster after inhalational versus intravenous (IV) sedation^{2,3}.
- The aim of this retrospective analysis was to compare mortality, SAPS II scores, sedation time, ventilation time and recovery of patients sedated with the ACD in 2005 compared to a group of patients sedated IV.

Material and Methods

- A gas scavenging system was connected to the gas outlet of an ICU ventilator (Evita 2, Dräger, Lübeck; or Bennett 840, Tyco Healthcare, Neustadt, Germany).
- Endtidal concentrations were monitored with a Vamos® gas monitor (Dräger).
- The ACD was set up according to the manufacturer's instructions and liquid isoflurane or sevoflurane (Abbott, Wiesbaden, Germany) was applied via a syringe pump.
- Only one patient could be offered the new method at a time.
- Statistics: retrospective cohort analysis, Chi²-test, t-test.

Results and Discussions



Patient example



- 69 yrs old lady, 158cm, 76kg,
- Initial SAPS II: 42.
- perforated colon diverticulitis
→ purulent peritonitis
- Day 0: Sigmoidectomy, abdominal lavage, protective ileostomy, sevoflurane 5 ml/h, sufentanil 100 µg/h, noradrenalin 0.3 mg/h
- Day 3: Abdominal lavage, isoflurane 6 ml/h, sufentanil 10µg/h
- Day 5: Abdominal lavage, definitive closing of abdominal wall with vicryl mesh, isoflurane 5 ml/h, sufentanil 10µg/h
- Day 7: Isoflurane stopped at 12:30, sufentanil 10 µg/h continued, Patient fully orientated, tracheal tube removed at 13:00
- Day 9: Patient discharged from ICU

Conclusions

• In this non-randomized retrospective analysis patients ventilated for >96h showed a decreased mortality and a quicker recovery after inhalational compared to IV sedation.

• Although these results may be due to selection bias, they warrant a prospective Multicenter study comparing inhalational and IV sedation focused on outcome parameters.

- In 2005, 220 patients were ventilated, 61 for longer than 4 days (96 h):
- | | ACD | IV | Significance |
|--------------------|--------|--------|--------------|
| number of patients | 12 | 49 | |
| mortality | 5/12 | 36/49 | p=0.035 |
| age | 66 ±10 | 73 ±12 | p=0.031 |
| initial SAPS II | 43 ±14 | 42 ±12 | ns |

- Data of Survivors:
- | | ACD | IV | Significance |
|-----------------------------------|---------|---------|--------------|
| number of patients | 7 | 13 | |
| age | 61±10 | 69±12 | ns |
| height [cm] | 173±10 | 168±13 | ns |
| weight [kg] | 77±11 | 72±15 | ns |
| Initial SAPS II | 36±9 | 38±9 | ns |
| ICU days | 27±15 | 24±15 | ns |
| ventilator days | 18±9 | 15±9 | ns |
| sedation days | 15±7 | 8±6 | ns |
| ventilator free days | 6±4 | 9±6 | ns |
| ventilator free / ventilator days | 0.6±0,2 | 1.7±1,0 | p=0.036 |
| sedation free/ sedation days | 0.4±0,2 | 0.7±0,4 | p=0.002 |

- Survivors after ACD were ventilated and sedated longer, but thereafter made a quicker recovery (ventilator free and sedation free days) compared to IV sedation. The ratio ventilator free/ventilator days was signif. lower after ACD.
- In the current German hospital finance system, this ratio has great economical impact.

References:

1. A. Meiser, H. Laubenthal Best.Pract.Res.Clin. Anaesthesiol. 19:523-38 (2005)
2. P. Sackey et al. Crit.Care Med. 32:2241-6 (2004)
3. A. Meiser et al. Brit.J.Anaesthesia 90:273-80 (2003)