Comparison of Inotropic Requirements for Patients Undergoing Open Heart Surgery with two Different Anesthetic Drugs

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Abstract

Background- Inotropic requirements of patients undergoing open heart surgery for weaning from CPB depends on multiple factors, including type of heart disease and its severity, co-existing diseases, success in surgical operation technically and type of anesthetic drugs. This study was performed to study the effects of anesthetic drugs on the need of open heart surgery patients for inotropic agents.

Methods- A prospective clinical trial analysis was performed on 60 patients, 30 of them were anesthetized with propofol and 30 of them received midazolam. Selection of type and dose of premedication drugs, intraoperative opioid and muscle relaxants in the two groups were the same. Maintenance of anesthesia in the two groups was by infusion of specific doses of anesthetic drugs.

Results- Use of inotropic drugs for weaning from CPB in group I (propofol group) was less than group II (midazolam group).

Conclusion- We observed that inotropic requirements of group I was 16% and group II was 30%, so propofol is not only safe for open heart surgery patients, but also is useful for reducing the need of these patients for inotropic agents.

The Effect of Hypothermic Cardiopulmonary Bypass on BIS Scores and Propofol Requirements

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Abstract

Background- The bispectral index (BIS) has been proposed as a measure the depth of anesthesia. Awareness is a particular problem in cardiac anesthesia with cardiopulmonary bypass (CPB). This study was designed to assess the effect of hypothermia during CPB on BIS and propofol requirements.

Methods- Twenty consenting patients scheduled for elective cardiac surgery were studied. They were randomly allocated to one of two groups. All patients were given propofol by target controlled infusor (TCI) with continuous infusion of fentanyl (0.6 μg/kg/min). In group A, propofol TCI concentration was adjusted with BIS score of 40 before CPB. The change of BIS and temperature was monitored during and after CPB. In group B, BIS scores were maintained at 35-40, propofol TCI concentrations and temperatures were monitored. All patients were questioned about awareness during the surgery.

Results- In group A, the BIS scores were decreased by temperature during and after CPB compared to pre-CPB period ($p<0.05$). In group B, the required propofol TCI concentrations were decreased during hypothermic CPB compared to pre-CPB period. No patients experienced awareness during operation.

Conclusion- The BIS scores and the propofol requirements were decreased during the hypothermic CPB. Bispectral analysis was a reliable monitor during hypothermic CPB to measure anesthetic requirement and hypnotic state under this conception.

A Comparison Between General Anesthesia and Thoracic Epidural Anesthesia in Off-Pump CABG

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Abstract

Background- Coronary artery disease is one of the major causes of mortality in developing countries. Cardiac surgeons recently use a surgical method of off-pump CABG. This method avoids CPB and its side effects. An anesthetic plan for this surgery is thoracic epidural anesthesia (TEA).

The benefits of TEA include hemodynamic stability, decreased oxygen demand and perioperative myocardial ischemia, attenuation of catecholamine response, analgesia improvement and shortening of mechanical ventilation.

Methods- A prospective, randomized study was performed on 60 patients divided into two groups. Hemodynamic changes, time of extubation and analgesia after operation were collected and statistical analysis performed.

Results and Discussion- In comparison between the two methods we concluded that hemodynamic parameters are more stable, the time of extubaton is shorter and analgesia is better in the TEA group.

Comparison Between Intravenous Anesthesia Techniques in Pediatric Ductal Artery Closure

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Abstract

Introduction- Ductus arteriosus closure in children with coil is a pediatric cardiologic invasive technique used since 1992. The aim of this study was to compare two intravenous anesthetic techniques with spontaneous breathing and ketamine versus propofol for these children.

Methods- After parental and ethic approval, 35 ASA II children without other congenital cardiopathy were included in this prospective study. In the ketamine group (19 children), induction was achieved with 2 mg/kg of ketamine followed by 5mg/kg/h for maintenance. In propofol group (16 children), induction was achieved with 3mg/kg of propofol followed by 15mg/kg/h for maintenance. In all cases, immobility was requested. Local anesthesia was used for femoral puncture. Children were followed from induction to awareness. Collected data were age, weight, duration of anesthesia, minimal and maximal heart rate (min HR, max HR), minimal and maximal systolic arterial pressure (min SAP, max SAP), minimal and maximal SpO_2 (max SpO_2, min SpO_2). Statistic analysis was done with Mann-Whitney and t-tests.

Results- Demographic data were comparable in both groups. There were no statistical differences between the two groups concerning anesthetic duration, min HR, max HR, min SAP, max SAP, max SpO_2 and min SpO_2. No anesthetic complication occurred during procedures.

Conclusion- Propofol appears to induce more vasoconstriction compared to ketamine. These two anesthetic techniques are nevertheless safe for ductus arteriosus closure, min SpO_2 remaining over 94% for propofol group and 96% for ketamine group.

Impact of Anesthetic Induction on Left Ventricular Diastolic Function in Patients with Coronary Artery Disease

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Abstract

Background- Induction of general anesthesia in patients with coronary artery disease (CAD) is often associated with decreases in blood pressure threatening myocardial oxygen balance. Left ventricular (LV) relaxation throughout early diastolic filling is the most susceptible part of the cardiac cycle to ischemic stimuli. Color M-mode Doppler flow propagation velocity (VP) has been proven to be a quantitative index of LV relaxation. Therefore, VP was measured to assess the impact of anesthetic induction on LV diastolic function in patients with CAD.

Methods- 20 patients with significant CAD were enrolled in this protocol. Anesthetic induction for coronary artery surgery was achieved with sufentanyl, propofol or isoflurane and cis-atracurium. Before and after anesthetic induction, color M-mode Doppler echocardiography was done in the apical-4-chamber view with the cursor aligned parallel to LV-inflow. Registrations were videotaped for off-line analysis. Data were analyzed using paired t-test.

Results- Anesthetic induction resulted in decrease in heart rate (HR), systolic (SAP), diastolic (DAP) and mean (MAP) arterial pressure. Hemodynamic changes were not associated with impairment in LV diastolic function.

	VP cm/s	**HR/min**	**SAP mmHg**	**DAP mmHg**	**MAP mmHg**
Before	51 ± 5.3	62 ± 12	161 ± 25	69 ± 11	101 ± 16
After	53.1 ± 8.9	49 ± 9	113 ± 28	54 ± 13	71 ± 17
P	0.457	0.000	0.000	0.000	0.000

Conclusion-Anesthetic induction in patients with CAD is safe with respect to LV diastolic function despite a marked fall in blood pressure, and hence coronary perfusion pressure.

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Early Extubation after CABG Improves Morbidity but Not LOS and Mortality

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Abstract

Introduction- Early extubation after cardiac surgery has been proposed to reduce length of stay and hospitalization costs without increase morbidity. Does fast-track anesthesia after coronary artery bypass graft improve morbidity, mortality and reduce length of stay (LOS) in our cardiac intensive care unit?

Methods- From 1999 to 2001 the anesthetic procedures have been modified to allow early extubation after CABG. 10 morbidity items, ICU LOS, and mortality have been studied in our patients undergoing CABG, in 4 groups.

The anesthetic procedure for all patients was the same and the used drugs were midazolom, sufentanyl, fentanyl, atracrium, and isoflurane.

Dose of midazolom according to groups 1-4 was 0.5, 0.3, 0.1, 0.01 mg/kg. There was no significant difference between patients' age, sex, weight, height, parsonnet score, grafts per patients, cross clamp and CPB duration of patients.

Results- Early extubation increased from 25% in Group 4 to 82% in Group 4 ($p<0.001$) and also need for Dobutamine decreased from 31% to 16% ($p<0.05$). Decrease in pneumonia was significant, 3.6% to 2.4% ($p<0.05$). During 36 hours after operation, bleeding was decreased from 1100 ml to 770 ml. Other items didn't show significant difference.

Conclusion- Despite a decrease in morbidity, LOS could not be reduced by using fast-track anesthesia. Another significant change is marked reduction in dobutamine needs.

Comparison of Early Extubation in Coronary Artery Bypass Grafting with Epidural Anesthesia and Propofol

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Abstract

Background- Published studies show early extubation after coronary artery bypass grafting and other cardiac surgery procedures is interesting for cardiac anesthesiologists. Early extubation is recommended without increasing complications. This prospective, randomized and double blind study was performed. Choosing the optimum approach for early extubation was the aim of study

Methods- 120 patients with ASA III in three groups were studied. Premedication was the same in all patients. Epidural was performrf for the patients in group I, Group II received midazolam, and infusion of propofol was used for group III patients. Data were analyzed with SPSS software.

Results- 84% of patients were male, mean age 64 years and 72% had stable anagina. Previous percentage of hypertension, myocardial infarction, congestive heart failure and addiction to opium were 63%, 41%, 7%, and 43%, respectively. Mean LVEDP was 17 mmHg and ejection fraction 58%. Mean time for extubation in epidural group was 7.2 hours, in Midazolam group 19, and in propofol group 4.9 hours ($p<0.001$).

Mean time for discharge from ICU in epidural group was 79 hours, in midazolam group 25.2 hour and in propofol group was 11.9 hours ($p<0.001$). Mean days of hospital stay in the three groups was 14.7, 8.1, 6.8 days ($p = 0.009$). 100% of epidural group had complications and episodes in ICU. The frequency of myocardial ischemia, hypotension and tachycardia in this group was 43%, 94%, and 73% ($p<0.001$). Also this frequency for propofol group was 12%, 68%, 39% ($p<0.001$).

Conclusion- Epidural anesthesia with its complications and episodes during peri-operative period in ICU and ward is not a good approach to performing early extubation. Howevery, propofol is a suitable drug for this aim.

Early Tracheal Extubation in Pediatric Pulmonary Artery Banding

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Abstract

Background- This study investigates early tracheal extubation on the operating table after pulmonary artery banding and patients transferred to pediatric surgical intensive care unit with spontaneous ventilution.

Methods- We studied 27 patients (age groups 5 month to 12 months). All patients were scheduled for pulmonary artery banding in elective condition. Premedication was obtained with midazolam 0.2mg and promethazine 1mg/kg PO. Anesthesia was induced with ketamine 1mg/kg in a short intravenous infusion, associated with midazolam 0.1mg/kg and with infusion 0.1 mg/kg and maintained with infusion of atracurium 4μg/kg/min (until pulmonary banding was done), then ended all infusion drugs. After ending the surgery and inserting chest tube, neostygmine 0.04mg/kg and atropine 0.02 mg/kg was given in a short intravenous infusion. Monitoring was invasive direct arterial line and continuous arterial blood pressure monitoring associated with continuous pulse oximetry. After awareness and spontaneous ventilation via tracheal tube, and stability of hemodynamic condition, the patients were extubated. Cardiovascular changes of 6 cases from basal values were considered significant. Four cases were reintubated and unfortunately 2 of them were never extubated and died.

Results- There were no significant changes of homodynamic parameters throughout the surgical procedures. Mean surgery time was 65 min. All patients were successfully extubated at the first attempt, mean time interval from admission to extubation was 25 min. after end of operation. Transfer to the pediatric cardiac intensive care unit was possible after extubation.

Conclusion- Our results show that the drug associated ketamine and atracuriam with continuous infusion gaurantees an adequate level of anesthesia and early extubation. No adverse effects occurred and regular oral nutrition could be restarted early with favorable effects especially in younger patients.