

Abstracts

EUROANAESTHESIA 2019

The European Anaesthesiology Congress

1 - 3 June 2019

Vienna, Austria

European Journal of Anaesthesiology

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European Journal of Anaesthesiology (ISSN: 0265-0215) is published monthly by Wolters Kluwer Health, Inc. and distributed in the US by Mercury Airfreight International, Inc., 365 Blair Road, Avenel, NJ 07001. Periodicals postage paid at Rahway, NJ. POSTMASTER: send address changes to *European Journal of Anaesthesiology*, PO Box 1610, Hagerstown, MD 21740, USA.

All correspondence should be addressed to the Editorial Office: *European Journal of Anaesthesiology*, Lippincott Williams & Wilkins, Citi Building, 41st Floor, 25 Canada Square, London E14 5LQ, UK
Publisher Daniel Hyde

Production Editor Duncan Martin-Holloway

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15AP01-2

Risk factors and clinical outcomes of postoperative delirium in elderly patients after non-cardiac surgery: A prospective cohort study

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Background and Goal of Study: The incidences of postoperative delirium (POD) vary from 10-60%. Many preoperative and intraoperative factors have been reported as risk factors of POD. The purpose of this study is to determine the incidence, risk factors and clinical outcomes of POD in elderly patients undergoing non-cardiac surgery.

Materials and Methods: A total of 429 patients aged 60 years and older who underwent scheduled non-cardiac surgery between November 2013 and December 2014 were enrolled. Delirium was assessed using the Confusion Assessment Method algorithm and Confusion Assessment Method for Intensive Care Unit. Cognitive function was examined using the Mental Status Examination Thai 10 (MSET10) and Montreal Cognitive Assessment (MoCA) by two trained interviewers. Functional status was evaluated using Barthel index of daily activity of living. Risk factors of POD were analyzed using binary risk regression analysis.

Results and Discussion: Forty-four patients (5.1%) developed POD. Hyperactive delirium was the most common (63%), followed by hypoactive (4%) and mixed subtypes (4%). The median duration of delirium was 1(1-2) days. Delirious patients had significantly lower preoperative MSET10 (19.2 ± 5.2 vs 22.6 ± 4.5 , $p < 0.001$), MoCA scores (13.4 ± 4.4 vs 16.8 ± 4.7 , $p < 0.001$) and Barthel index (17.7 ± 5.5 vs 23.1 ± 4.2 , $p = 0.002$) than non-delirious patients. There were significant differences in mean Barthel index scores of delirious patients at discharge compared to their preoperative scores ($p < 0.001$). Delirious patients had significantly higher incidence of intensive care unit admission (27.3% vs 3.7%, $p < 0.001$), higher mortality rate (4.5% vs 0.2% ($p = 0.004$)) and higher length of hospital stay (15.5(8-19) days vs 8(5-11) days, $p < 0.001$). The independent risk factors of POD included age > 70 years (RR:3.6, 95% CI:1.3-9.6, $p = 0.013$), preoperative cognitive impairment (RR:2.8, 95% CI:1.1-7.0, $p = 0.032$), history of psychiatric disorder (RR:4.9, 95% CI:2.2-10.7, $p < 0.001$) and preoperative hemoglobin ≤ 10 g/dl (RR:2.5, 95% CI:1.1-5.9, $p = 0.044$).

Conclusions: POD can cause higher morbidity and mortality. Identification of risk factors of POD could lead to correct some modifiable risk factors, use preventive strategies, and provide postoperative surveillance in order to minimize severity of POD and improve postoperative outcome.

Acknowledgements: This study was supported by a grant from the National Research Council of Thailand.

15AP01-3

Genome-wide association study in older patients with postoperative cognitive dysfunction

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Background and Goal of Study: Postoperative cognitive dysfunction (POCD) is a common neurocognitive disorder after surgery, particularly in elderly patients. Numerous pathogenic pathways leading to POCD have been discussed. Various studies have suggested genetic risk factors. This prospective cohort study aimed to detect genome-wide associations with POCD in older surgical patients.

Materials and Methods: After ethical review board approval, study participants aged ≥ 65 years completed a battery of neuropsychological tests consisting of the Consortium to Establish a Registry for Alzheimer's Disease-Neuropsychological Assessment Battery, Trail Making Tests A and B, and the Phonemic Fluency Test (S-words) before and one week and three months after major noncardiac surgery. Test variables were converted into standard scores (z-scores) based on demographic variables (age, gender, and level of education). POCD was diagnosed if the decline was > 1 standard deviation of z-scores in two or more of the 15 variables in the test battery. A genome-wide association study (GWAS) was performed to determine potential alleles that are linked to the phenotype POCD.

Results and Discussion: Sixty-three patients with blood samples were included in the study. POCD was present in 47.6% of patients one week after surgery and in 34.2% of patients three months after surgery. Insufficient quality of blood samples and missing genotype data lead to the exclusion of 26 patients. In the remaining 37 patients, the GWAS was performed, but no association was found with POCD.

Conclusions: In this patient cohort, a GWAS did not reveal an association between specific genetic alleles and POCD one week and three months after surgery. Future genetic analyses should focus on specific candidate genes for perioperative neurocognitive disorders.

15AP01-4

The influence of the type of general anesthesia on the myocardial function and inflammatory response in the elderly

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Background and Goal of Study: The issue of prevention of cardiac complications during non-cardiac elective surgery in elderly is an actual problem. Decompensation of cardiac function in elderly may be cause of postoperative lethality, significantly increase the duration and cost of treatment. However, cardiac decompensation can be caused not only by the presence of concomitant cardiac diseases, but by inflammatory changes, initiated by surgery and anesthesia. The goal of study was to evaluate cardiovascular condition in elderly after intravenous versus volatile anaesthesia and define the relationship with markers of Inflammatory Response.

Materials and Methods: We examined 40 patients aged 60 to 82 years for abdominal surgery with total intravenous or volatile anesthesia. There were representative of the gender, age, ASA, Euroscore. TNF, IL-6, IL-10 in EDTA-plasma determined by enzyme immunoassay (set Biomedica) (1) preoperative, (2) 1-st day, (3) 5-s day. To control the cardiovascular condition we used echocardiography, ECG-monitoring and central hemodynamics analysis by thoracic rheography. As a marker of myocardial damage was used troponin I by cytostat. Data are presented as M \pm m, statistically significant value of $p < 0.05$.

Results and Discussion: Echocardiography did not show significant changes of the main parameters in patients during of the perioperative period. Baseline hemodynamic parameters were not statistically significantly different. In the group after total intravenous anesthesia were significant afterload reduction with a significant tachycardia. Inhalation anesthesia due moderate and gradual decrease in afterload without developing tachycardia and stable mean blood pressure. After anesthesia, the level of IL6 in the group with intravenous anesthesia was significantly higher and increased near to 2651% ($p = 0.002$). TNF alpha also increased significantly in the group with intravenous anesthesia from 1 day and slightly decreased by 5 days. The concentration of anti-inflammatory cytokine 10 increased in inhalation group. In several patients with intravenous anesthesia, we also found a positive troponin unchanged on the ECG.

Conclusions: The use of inhalation anesthesia in the elderly allows maintaining central hemodynamic parameters in optimal mode, accompanied reduction of markers of inflammatory response, as well as the absence of a marker of myocardial damage.

15AP01-5

Characterization of intraoperative hypothermia in the elderly surgical population

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Background: Demographic changes suggest a dramatic growth in elderly patients undergoing surgery. Hypothermia is a common perioperative complication, even when mild is associated with perioperative complications. Age > 65 years and male gender were reported to be predictive factors for intraoperative hypothermia in addition to severity of illness, anemia, chronic renal failure, unintended weight loss and Alzheimer's disease. Still, knowledge regarding the occurrence of hypothermia in different age groups is scarce. Thus in a prospective study we aimed to evaluate the rate and progress of hypothermia in the super-elderly (age > 80) vs. the elderly (age 65-80).

Methods: Consenting patients, aged > 65 undergoing surgery under general anesthesia that spent > 2 hours in the operating room (OR) were recruited. Data including demographics, medical history and type and duration of surgery were collected. Temperature (Temp) in various times through the perioperative period was assessed: 1. Baseline (in the department) before arriving the OR; 2. Within 30 min of anesthesia induction; 3. Delta between baseline and first OR Temp; 4. The lowest in the OR (nadir); 5. First in the recovery room (RR) (within 30 min); 6. Area under the curve (AUC) for Temp $< 36^\circ\text{C}$ during surgery.

Results: 190 patients were recruited, 127 aged 65-80 (72.1 ± 3.8) and 63 aged > 80 (85.3 ± 3.9). There were no differences in demographics, type and duration of surgery between groups. Baseline Temp were similar between groups. The incidence of intraoperative hypothermia (Temp $< 36^\circ\text{C}$) and severe hypothermia (Temp $< 35.5^\circ\text{C}$) was not significantly different between the groups (77.2%, 76.2% and 52.8%, 55.9% in the elderly and super elderly, respectively). No differences were found between the groups in any of the measured parameters, except for the first Temp in the RR which was significantly lower among the super-elderly (36.1 ± 0.6 vs. 36.3 ± 0.44 $p = 0.02$). The highest drop in Temp for both groups was from baseline to first following induction of anesthesia ($\sim 1^\circ\text{C}$).

Conclusion: Intraoperative hypothermia is common in the elderly population. Perioperative heat loss patterns are similar in the elderly and super-elderly population. The significant difference in the first Temp in the RR might suggest that for the super-elderly it is harder to re-warm after reaching the nadir temperature. Thus, we should be very strict about preventing temperature drop in all patients but specifically more in the super-elderly.