An Exploration of Postoperative Delirium and Unplanned Perioperative Hypothermia in Surgical Patients

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Demographics: N=22,548

Mean Standard Deviation

Mean age 63.23 15.37
BMI 30.29 7.99
Mean anesthesia minutes 171.21 81.95
Mean minutes hypothermic 42.41 55.19

Probability of POD

Risk of POD by Age & Minutes Hypothermic Controlling for ASA Status

Gender Anesthesia Type Delirium ASA Class

91% 9%
3% 36%
50%
11% 3%

Results

Risk of POD by ASA Status & Minutes Hypothermic Controlling for Age

Demographics: N=22,548

Mean age 63.23 15.37
BMI 30.29 7.99
Mean anesthesia minutes 171.21 81.95
Mean minutes hypothermic 42.41 55.19

Discussion

• UPH was found to be protective to the development of POD in the oldest of old
• UPH was a contributing factor to POD in the younger patient, particularly sicker patients
• Assessment for and documentation of POD was missing in many younger patients

Limitations

• Conducted at a large regional referral center in the Southeast
• Limits generalizability to other populations/socio-economic groups
• Data was abstracted from an EMR, reflecting point-of-care documentation by the bedside care provider
• Greater chance of missing data
• Timing and documentation of the CAM-ICU and NuDESC may be inconsistent between providers
• Assessment of inter-rater reliability was not possible
• Temperature data may be from different devices, different routes, and inconsistent monitoring between providers

Implications

• This study builds the science of perioperative nursing by identifying a relationship between UPH and POD
• Further study is indicated to explore the physiology associated with the protective impact of UPH on POD in the elderly population
  • With consideration of adverse effects associated with UPH

Background

• Postoperative delirium (POD) may impact 72% of surgical patients > 65 years of age
• Associated with increased hospital length of stay, 1-month mortality, & post-acute discharge to long-term care, as well as a higher probability of developing dementia

• Unplanned perioperative hypothermia has been considered the trigger; however, relationship has been inadequately explored

Purpose

The purpose of this retrospective, exploratory study was to investigate associations between UPH and the incidence of POD among adults undergoing non-cardiac surgery.

Criteria

• All patients (>18 years) undergoing any major non-cardiac surgery during January 2014 to June 2017
• 52,500 records reviewed
• 22,548 met inclusion criteria
• Primary outcome measure was development of POD
• Operationalized by Confusion Assessment Method for ICU (CAM-ICU) score or by Nursing Delirium Screen (NuDESC)
• Independent variable UPH
• Operationalized by temperature of less than 36°C (96.8°F) at any time during the perioperative period
• Control variables included patient demographics, and intrinsic and extrinsic POD risk factors

Methodology

• Delirium
  • Clinical syndrome of acute central nervous system (CNS) dysfunction
  • Characterized by fluctuating inattention, changes in cognitive and perceptive functions, and psychomotor disturbances
  • May be hyperactive, hypoactive or mixed types

• Postoperative delirium (POD)
  • Typically develops on first through third postop days

• Unplanned perioperative hypothermia (UPH)
  • Non-therapeutic/uncontrolled core temperature drop below normal range of 36°C (96.8°F) during perioperative experience
  • All surgical patients receiving neuraxial and general anesthesia at risk

• Logistic regression predicting probability of POD conditional on UPH

Abstracted Variables

• A retrospective, exploratory study
• Practice-based research methodologies were used
• Data electronically abstracted from purposeful convenience sample of medical records of adult patients undergoing non-cardiac surgery
• Timeline: January 2014 to June 2017
• Logistic regression predicting probability of POD conditional on UPH

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