Intraoperative factors affecting the core body temperature in admission and at discharge of Post-Anesthesia Care Unit

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Factors affecting patient`s temperature at PACU`s admission.

Variable	Hypothermia	Normothermia	p
Gender, Female	357 (59.7%)	96 (27.2%)	0.001
Weight, kg	74.6±12.7	86.7±21.4	0.004
Duration of operation (min)	134.7±58.7	119.7±49.7	0.021
Site of anaesthesia (subarachnoid)	126 (21.1%)	20 (5.7%)	0.034
Perioperative hypothermia	210 (35.2%)	127 (35.9%)	0.004

Background: The perioperative hypothermia is a common perioperative complication of surgery, as the incidence of perioperative hypothermia ranges from 44% to 60%. Furthermore, intraoperative hypothermia often leads to postoperative hypothermia in the Post-Anesthesia Care Unit (PACU) with a rate of approximately 60%.

Goal of Study: The goal of the study was to explore the factors that affects the core body temperature in admission and at discharge of Post-Anesthesia Care Unit.

Materials and methods: This was a prospective, randomized and controlled clinical trial conducted in a large general hospital of Athens, Greece. The sample of the study consisted of 952 patients who underwent different type of surgeries. Hypothermia was defined when the tympanic temperature of patients was under 36oC. The temperature of patients was measured at the middle of the surgery (intraoperative), at the admission in the PACU and before the discharge of the PACU. The statistical analysis of the results was performed by x2 test and Student t test using the statistical package SPSS for Windows (version 21) and the statistical significance was set to p=0.05.

Results: Hypothermia rate of patients when admitted in PACU was 62.8%. Factors affecting the hypothermia (vs normothermia) rate in PACU were female gender (59.7 vs 27.2%, p=0.001), low weight (74.6±12.7 vs 86.7±21.4 kg, p=0.004), duration of surgery (134.7±58.7 vs 119.7±49.7 min, p=0.021), the subarachnoid anaesthetic technique (21.1 vs 5.7%, p=0.034), and the perioperatine temperature of patients (35.2 vs 35.9%, p=0.004). The hypothermia on discharge from PACU was affected by low weight (74.6±12.7 vs 86.7±21.4 kg, p=0.004), major surgery (79.6% vs 58.7%, p=0.008), prolonged surgery (139.4±61.7 vs 119.1±51.1 min, p=0.016), administration of propofol (76.9 vs 87.2%, p=0.012), and muscle relaxants (70.9 vs 79.5%, p=0.007), subarachnoid anaesthetic technique (19.3 vs 4.8%, p=0.001) and systolic blood pressure on discharge from PACU (131.9±24.5 vs 129.4±14.9 mmHg, p=0.014).

References

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Discussion: The incidence of perioperative hypothermia ranges from 44% to 60% (Karalapillai & Storrs, 2008). Studies have shown that low preoperative temperature and light weight are risk factors for hypothermia two hours after surgery and advanced age and low weight for hypothermia three hours after surgery (Kim & Yoon, 2014). Risk factors that have been found to be responsible for the intra-operative hypothermia include major surgeries (ie., abdominal, thoracic, spinal cord), blood transfusion, duration of operation over 2 to 3 hours, operating room temperature under 21.3 °C and general anesthesia, advanced age, catecholamine levels, preoperative body temperature and physical characteristics of the individual, (ie. body fat and weight (Kasai et al., 2003).

Factors affecting patient`s temperature at PACU`s discharge.

Variable	Hypothermia	Normothermia	p
Weight	74.6±12.7	86.7±21.4	0.004
Major surgery	476 (79.6%)	208 (58.7%)	0.008
Duration of operation	139.4±61.7	119.1±51.1	0.016
Propofol	460 (76.9%)	309 (87.2%)	0.012
Muscle relaxants	424 (70.9%)	281 (79.5%)	0.007
Site of anaesthesia (subarachnoid)	115 (19.3%)	17 (4.8%)	0.001
Systolic blood pressure at PACU	131.9±24.5	129.4±14.9	0.014

Conclusions: Female gender, low weight, duration of surgery, the anaesthetic technique, and the perioperative temperature of patients influences the body temperature of surgical patients in the PACU. All patients should be actively warmed both PACU and surgery, in order to avoid hypothermia and achieve normothermia.