

Hypothermia, shivering, and dexmedetomidine

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Postoperative temperature is increasingly used to indicate the quality of anesthesia. Anesthesiologists should measure and record the body temperature of their patients perioperatively and maintain it within normal limits. Hypothermia is usually defined as a body temperature less than 36°C and occurs commonly during surgery [1]. Although hypothermia can be protective during cerebral or cardiac ischemia, unintentional perioperative hypothermia is associated with an increased mortality rate. To prevent hypothermia during surgery, several methods are used. In this issue of the *Korean Journal of Anesthesiology*, Kim et al. [2] compared the effect of a forced-air warming system and circulating-water mattress on core temperature and the incidence of postanesthesia shivering in elderly patients. They found that the changes in core temperature over time did not differ between the two types of warming device. However, the incidence of postanesthesia shivering was different (13.0 vs 43.5%). The forced-air warming system is more effective in terms of reducing the incidence of postanesthesia shivering. Here, we postulate that the cause of postanesthesia shivering is not confined to hypothermia. De Witte et al. [3] evaluated the efficacy of resistive-heating or forced air warming versus no prewarming, applied before inducing anesthesia, and recommended that prewarming before the induction of anesthesia should be considered as part of anesthetic management.

Although the cause of postoperative shivering is not clear, most shivering associated with neuraxial anesthesia seems to be normal shivering, the expected response to hypothermia [4]. Perioperative hypothermia and shivering are associated with many adverse perioperative outcomes, including delayed anesthetic recovery, increased blood loss, and surgical wound

infection. Furthermore, excessive shivering increases oxygen consumption, and lactic acidosis, and it increases the metabolic rate by up to 400% [1,4]. Neuraxial anesthesia and old age both predict postanesthesia shivering. Therefore preventing shivering is important, especially in elderly patients undergoing neuraxial anesthesia for surgery. Various drugs have been investigated with a view to preventing or treating postoperative shivering. However, the ideal drug remains elusive. Recent reports indicate that dexmedetomidine has good anti-shivering properties [4-7]. In this issue of the *Korean Journal of Anesthesiology*, Park et al. [8] compared two doses of intravenous dexmedetomidine in elderly patients during spinal anesthesia. They observed the effect of dexmedetomidine on the prolongation of sensory and motor block, but did not monitor body temperature and did not describe a method for maintaining normothermia. However, shivering did not occur in any of the enrolled patients. Consequently, they could not evaluate the anti-shivering effect of dexmedetomidine. Although both Kim et al. [2] and Park et al. [8] studied elderly patients undergoing spinal anesthesia, the incidence of shivering was different. The cause of shivering is not clear. Indeed, many factors can cause shivering, and the incidence varies.

Core temperature monitoring remains rare during regional anesthesia, and hypothermia often goes undetected [4]. In the present aging society, the number of elderly patients who require anesthesia for surgery is increasing. Elderly patients are prone to hypothermia and shivering during the perioperative period. Therefore, both temperature monitoring, and prevention of postoperative shivering are essential during regional or general anesthesia in elderly patients.

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