

Rudrashish Haldar*, Sukhminder Jit Singh Bajwa, Jasleen Kaur

Department of Anaesthesia, Gian Sagar Medical College and Hospital, Banur, India

*Corresponding author.

E-mail: rudrashish@yahoo.com (R. Haldar).

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Importance of maternal body temperature recording after injection of meperidine during spinal anesthesia in patients undergoing cesarean section: an offering for conducting clinical studies

A importância do controle da temperatura corporal materna após injeção de meperidina durante a raquianestesia em pacientes submetidas à cesariana: uma sugestão para conduzir estudos clínicos

Dear Editor,

Shivering related to spinal and epidural anesthesia is distressing to parturient women as it may cause cardiovascular and metabolic disturbances. Shivering increases cardiac output and causes tachycardia; also, hypothermia-induced shivering increases total body oxygen consumption and could cause hypoxemia. These effects may place mothers and the fetuses at the greatest risk during delivery.¹ The rate of shivering varied from 36% to 55% in different studies.² Meperidine is a κ (Kappa)-receptor agonist and opioid μ (Mu) receptor that reduces the threshold of vascular constriction and is known to treat shivering effectively.³ Here we provide comments on three points on the importance of body temperature recording after injection of meperidine, based on clinical research conducted on patients undergoing spinal anesthesia for cesarean section.

First, intra-operative shivering is a particular feature of thermoregulation in awake patients undergoing regional anesthesia (in response to sympatholysis, vasodilatation and increased heat loss). Intra-operative shivering is inhibited during general anesthesia; accordingly patients are more prone to hypothermia and post-operative shivering. Hence, there are two important elements to regional anesthesia-induced shivering: (1) the desired effect of shivering, i.e., heat preservation by increased basal metabolic rate and (2) the unwanted effects of shivering (increased venous O₂, desaturation, myocardial O₂ extraction, discomfort and anxiety for patient, and possibly movement for surgeon and monitoring artifacts for the anesthesiologist (e.g., systolic pO₂, noninvasive blood pressure and ECG artifacts in intra-operative shivering).^{4,5} Therefore, the authors should measure maternal body temperature to assess the desired effects.

Second, whenever volume pre-loading with 10 mL/kg or 15 mL/kg of room temperature crystalloid is employed, the

maternal hypothermia could reasonably be expected to alter shivering prevalence. Therefore, maternal temperature recording is very important.

Third, if meperidine suppresses shivering, it may lead to lower body temperature following regional anesthesia and this may lead to more hypothermia and also to more shivering later on. Accordingly, appropriate body temperature recording after injection of meperidine during spinal anesthesia in patients undergoing cesarean section should be considered by authors in future studies for more accurate and reliable findings.

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Mohamed Amin Ghobadifar^{a,*}, Hassan Zabetian^b, Mohammad Yasin Karami^c, Zahra Mosallanezhad^d, Navid Kalani^b

^a Department of Student Research Committee, Jahrom University of Medical Sciences, Jahrom, Iran

^b Department of Anesthesiology, Jahrom University of Medical Sciences, Jahrom, Iran

^c Department of General Surgery, Mazandaran University of Medical Sciences, Mazandaran, Iran

^d Department of Obstetrics and Gynecology, Shiraz University of Medical Sciences, Shiraz, Iran

*Corresponding author.

E-mails: amin_m505@yahoo.com, m.ghobadi@jums.ac.ir (M.A. Ghobadifar).

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