SLIGHTLY MORE TIME IS NECESSARY TO ACHIEVE NEURAXIAL ANESTHESIA IN OBESE PATIENTS FOR CESAREAN SECTION. - A RETROSPECTIVE COHORT STUDY IN A JAPANESE TERTIAL HOSPITAL-

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Introduction

Neuraxial anesthesia in obese patients is often technically challenging because of procedural difficulties, such as increased distance to the epidural and/or subarachnoid spaces, impalpable anatomic landmarks, and inadequate positioning. An increased number of needle insertions have also been reported in obese patients for cesarean section (CS). However, there have been few reports obesity and the time needed to achieve neuraxial anesthesia. We hypothesized that obesity in pregnancy may result in a prolonged procedure time required for neuraxial techniques, and examined this hypothesis in a retrospective cohort study. This study is significant because the number of obese patients is increasing world-wide and measures such as earlier transfer of patients to the operating room (OR) could be considered.

Methods

We reviewed electronic hospital records of patients who had undergone CS in our hospital between the start of 2010 and the end of June 2018. We extracted the following patient data: ID number, age, body weight, height, type of anesthesia, time of entry to the OR, time of local anesthetic injection into the subarachnoid space.

Routines for CS patients with neuraxial anesthesia in the OR

When patients were transferred to the OR, the patient's entering time was recorded by the attending nurse. The patients were then placed on the operating table and standard monitoring was applied prior to anesthesia procedure. After confirming baseline measurements, they were placed in the right lateral decubitus position for neuraxial anesthesia. Neuraxial anesthesia was performed in a conventional manner by experienced residents (more than one year) or anesthesiologists. Spinal anesthesia was performed with a 25- or 23-gauge spinal needle. CSE anesthesia was performed using the two-needle technique, *i.e.*, epidural catheter placement at L1-L2 or Th12-L1, followed by spinal injection at L3-4 or L4-5. An epidural catheter was used for patient-controlled analgesia after surgery. In both anesthesia techniques, the time of start of anesthesia was recorded by the attending nurse when the local anesthetic was injected into the subarachnoid space.

AP-time was defined as the time period between the patients entering the OR and receiving subarachnoid injection of local anesthetics. We compared the AP-time among patients with different body mass indices (BMI: kg/m²) in the spinal and CSE anesthesia groups. Patients were classified into four Classes: Class C (control, BMI < 30.0), Class I (BMI: 30.0-34.9), Class II (BMI: 35.0-39.9), and Class III (BMI ≥ 40), according to the WHO criteria.

Results

Flow diagram of the CS patients is illustrated in Fig. 1. We compared AP-times between the Spinal (n=795) and CSE (n=722) groups. The AP-time was longer in obese patients than in non-obese ones in both the spinal and CSE anesthesia groups (Tables 1.2). This effect was also confirmed with a weak, but, significant linear correlation between AP-time and BMI in both groups, but the variations within each BMI class were considerably as shown with 20 minutes 95% prediction interval in both groups) (Fig. 2,3).

Table 1. AP-time in Spinal group.

Classes	N (%)	Body weight (kg)	AP-time (min)	Maxim. AP-time (min)
C	647 (81.4)	61.4 ± 8.4	11 ± 4	50
I	103 (13.0)	78.7 ± 5.7	12 ± 4*	28
II	31 (3.9)	89.6 ± 7.5	14 ± 6*	34
III	14 (1.8)	110.6 ± 13.9	15 ± 3*	22
Total	795 (100)	65.6 ± 12.7	11 ± 4	50

Table 2. AP-time in CSE group.

Classes	N (%)	Body weight (kg)	AP-time (min)	Maxim. AP-time (min)
C)	599 (83.0)	60.9 ± 7.9	16 ± 5	42
I	89 (12.3)	80.0 ± 6.0	19 ± 8*	54
II	26 (3.6)	92.0 ± 10.0	19 ± 7	40
III	8 (1.1)	111.3 ± 15.8	17 ± 3	22
Total	722 (100.0)	64.9 ± 12.4	17 ± 6**	54

Conclusion

This retrospective study using medical records from a single hospital showed that obesity in pregnancy marginally prolongs the time needed to achieve neuraxial anesthesia. The effect was, however, less than the variation within the same BMI class.

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