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LETTER TO EDITOR

Nalbuphine Sebacate Interferes with the Analgesic Effect of Fentanyl

Dear Editor,

Nalbuphine sebacate (Naldebain®), an agonist–antagonist opioid, has been introduced for postoperative pain since 2017 in Taiwan.[1] Theoretically, Naldebain® could interfere with μ-mediated antinociception.[2] To the best of our knowledge, no report of Naldebain® is relevant to this phenomenon.

Here, we present a case who experienced postoperative severe pain after Naldebain® administration. A 52-year-old male (case 1), with a height of 164 cm and a weight of 75 kg, had a history of hypertension and trigeminal neuralgia. He underwent open reduction internal fixation of the right distal radius. Sixteen hours before anesthesia, intramuscular Naldebain® 150 mg was administered. Anesthesia was induced with fentanyl 100 μg, cisatracurium 8 mg, and propofol 150 mg and maintained with desflurane. During 4 h of the operation, fentanyl 200 μg, tramadol 100 mg, nicardipine 4 mg, propofol 50 mg, atenolol 5 mg, and exhaled 10% desflurane concentration were administered to manage hyperdynamics (heart rate around 90–100 bpm and blood pressure 180–160/110–80 mmHg). In the postanesthetic care unit, the patient complained severe pain with a Numerical Rating Scale (NRS) score of 9/10 even with rescue fentanyl 100 μg, tenoxicam 20 mg, and tramadol 100 mg. With persistent pain (NRS 8/10), parecoxib 40 mg was given 2 h after the surgery. Pain relieved to 2/10 an hour later.

A 62-year-old female (case 2) with a height of 159 cm and a weight of 63 kg receiving corrective osteotomy for right valgus knee experienced a different course. Intramuscular Naldebain® 150 mg was administered 12 h before anesthesia. Anesthesia was induced with propofol, remifentanil, and rocuronium. Maintenance of the effect-site concentration of propofol and remifentanil ranged between 2.0–2.5 μg/ml and 1.5–2.5 ng/ml, respectively, and was adjusted based on bi-spectal index and hemodynamics. During emergency, effect-site concentration of remifentanil was kept 1 ng/ml until extubation and 1 μg/kg of remifentanil in a volume-controlled burette with 50-ml normal saline dripped for 30 min to attenuate remifentanil-induced hyperalgesia. During 3.5 h of anesthesia, propofol 850 mg, remifentanil 700 μg, and ketorolac 30 mg were administered. Pain was not complained after the surgery.

Our two cases did not encounter the same scenario. The first reason might be the significantly higher opioid consumed in case 2 than in case 1 (remifentanil 700 μg versus fentanyl 200 μg), although fentanyl 200 μg used in case 1 might be enough. It is consistent with a previous report that nalbuphine did not attenuate the antinociceptive effect of morphine at a dose of 5 mg/kg in rats.[3] Besides the dosage, remifentanil, belonging to a short-acting fentanyl family, is twice as potent as fentanyl. Thus, we speculated that the effect of μ-antagonist of Naldebain® to remifentanil was less than that of fentanyl. The property of nalbuphine-induced greater analgesic efficacy in women than in men[4] was also exhibited.

In conclusion, anesthesiologists must notice the administration of Naldebain® before surgery. Regional anesthesia without opioid would be preferred. Additional monitors for the assessment of analgesia/nociception balance such as analgesia nociception index[5] would be helpful while general anesthesia. Moreover, anesthesiologists need to be aware of analgesia/nociception balance in the case of reopen or second surgery within 6 days after Naldebain® administration.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients have given their consent for their clinical information to be reported in the journal. The patients understand that their names and initials will not be published, and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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