Re-sleeping after reversal of remimazolam by flumazenil

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To the Editor:

Remimazolam is reported to be a novel ultrashort-acting benzodiazepine [1]. It is highly advantageous as it induces faster and safer recovery than pre-existing intravenous and volatile anesthetics since its action can be completely antagonized by flumazenil [2–4]. According to the package insert, an initial dose of 12 mg/kg/h should be given until the patient falls asleep, and general anesthesia is maintained by continuous administration at 1 mg/kg/h [5]. This rate can be increased up to 2 mg/kg/h and a maximum of 0.2 mg/kg can be administered as a bolus, if necessary. However, a 62-year-old female patient (152.4 cm, 57.9 kg) became drowsy again in the ward 45 min after antagonizing remimazolam with flumazenil, despite following the administration method described in the instructions. Rocuronium 0.6 mg/kg was additionally utilized for the endotracheal intubation. After the general anesthesia induction, remimazolam was administered during the surgery (laminoplasty for lumbar spinal stenosis) at 1 mg/kg/h for 3.5 h, and the intraoperative BIS value was maintained in the range of 40–60. Remimazolam was discontinued after postoperative X-ray, and 0.5 mg flumazenil was administered. After confirming that the patient was well awake and could follow orders, she was sent to the ward. Once there, she became unconscious again. After the anesthesiologist examined the patient, a second dose of 0.5 mg flumazenil was administered. The patient awakened instantly and was able to follow orders. After that, the patient did not fall into somnolence again.

The package insert of flumazenil states that its context-sensitive half-time is about 50 min, and the package insert

of flumazenil states that the active durations of flumazenil and remimazolam are comparable. Based on our experience, it is important to recognize the possibility of re-sleeping of patients after complete reversal of remimazolam by flumazenil, even when all recommended dosages are used.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest statement.

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