



Remimazolam Anxiolysis for Epidural Placement

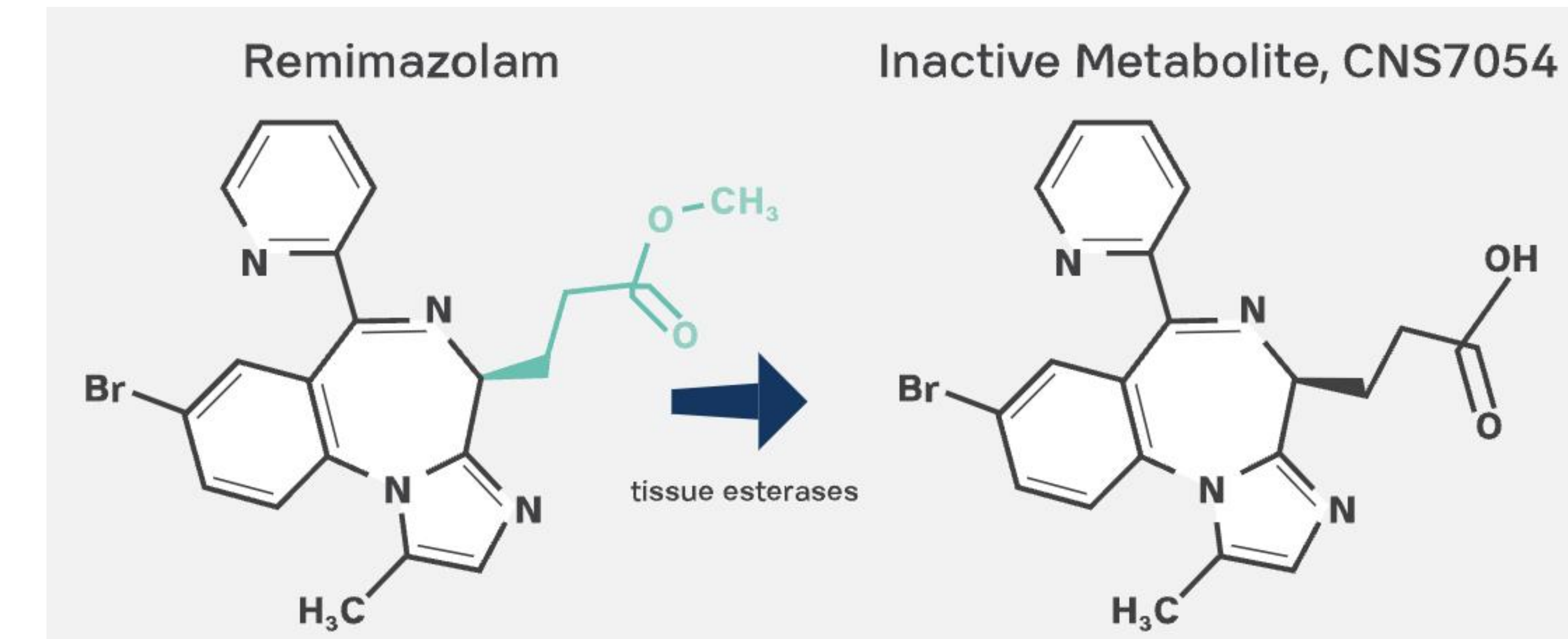
James W. Parry, MD¹, Tyson Hamilton, MD¹, Courtney M. Hood, MD¹

¹San Antonio Uniformed Services Health Educations Consortium (SAUSHEC), San Antonio, TX



Introduction

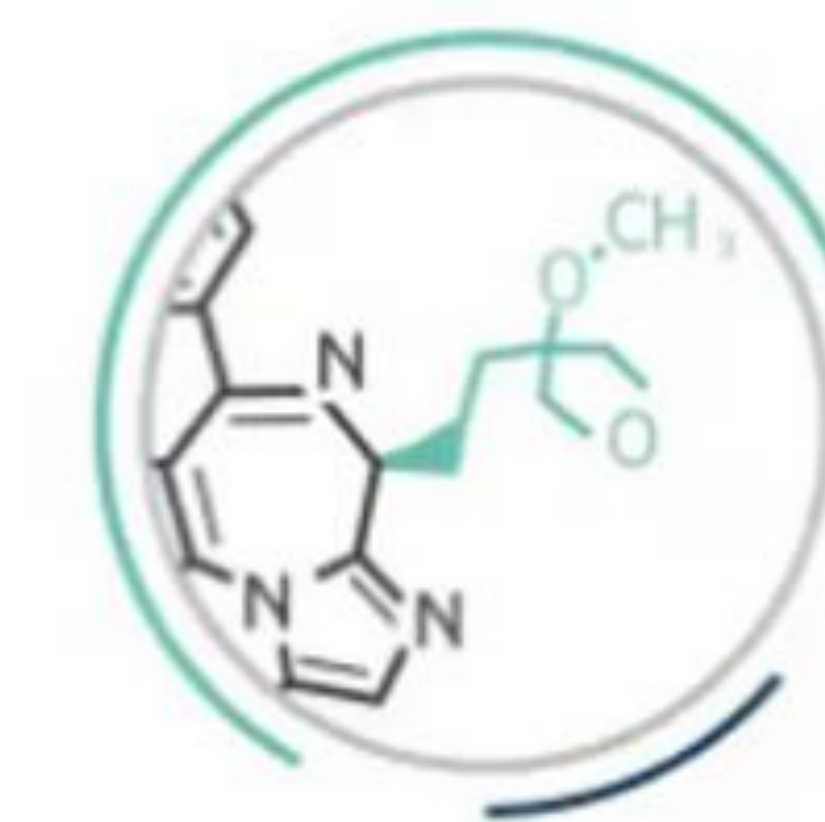
- Remimazolam is a novel, ultra-short-acting benzodiazepine used for procedural sedation and maintenance of general anesthesia characterized by fast onset, fast recovery, and minimal hemodynamic side effects.¹
- Its structure is a combination of midazolam and remimfentanil, with the addition of a carboxylic ester side group, allowing for rapid organ-independent metabolism by tissue esterases.²
- Remimazolam may be an ideal choice in Obstetric Anesthesiology due to its pharmacokinetic profile of small distribution volumes and high elimination clearance.¹
- There is no current evidence regarding the safety of remimazolam in the fetus and a US FDA pregnancy category has not been assigned.



Onset: 1 – 1.5 min
Median peak sedation: 3 – 3.5 min after a 5 mg dose



Median time to fully alert: 11 – 14 min



Terminal half life: 37 – 53 min



Remimazolam Anxiolysis for Epidural Placement

James W. Parry, MD¹, Tyson Hamilton, MD¹, Courtney M. Hood, MD¹

¹San Antonio Uniformed Services Health Educations Consortium (SAUSHEC), San Antonio, TX



Case Presentation

- 24-year-old G1P0 at 39 weeks and 1 day presented for induction of labor due to chronic hypertension requesting labor analgesia via epidural placement.
- She reported a history of attention-deficit hyperactivity disorder, post-traumatic stress disorder, and anxiety.
- Two initial attempts, one by a resident and one by the staff anesthesiologist, were made at labor epidural placement without success. Further attempts were halted due to patient movement, significant non-radiating pain with Tuohy placement, and worsening anxiety.
- Patient requested cesarean delivery via general endotracheal anesthesia but agreed to additional attempt at labor epidural placement with anxiolysis.

Epidural Placement

- The patient was placed in the sitting position and remimazolam was administered using 1-2 mg bolus doses every two minutes for a total of 9 mg.
- Epidural placement was successful with one pass at the L4-5 level without complication.

Dosing Recommendations:

Induction: 2.5 – 5 mg IV over 1 min

Wait at least 2 min prior to additional maintenance doses of 1.25 – 2.5 mg



Remimazolam Anxiolysis for Epidural Placement

James W. Parry, MD¹, Tyson Hamilton, MD¹, Courtney M. Hood, MD¹

¹San Antonio Uniformed Services Health Educations Consortium (SAUSHEC), San Antonio, TX



Outcome

- Patient returned to her baseline mental status exam approximately 12 minutes after the last remimazolam dose. She did not require any hemodynamic or airway support.
- Patient experienced adequate labor analgesia using 0.2% ropivacaine and 2 mcg/mL of fentanyl at a basal rate of 8 mL per hour with bolus function of 3 mL every 15 minutes as needed.
- SVD of a viable neonate approximately nine hours post-epidural placement. APGAR scores of 8 and 9 at 1 and 5 minutes, respectively.
- Cord gas at delivery was as follows:
 - pH: 7.294
 - pCO₂: 42.5
 - HCO₃⁻: 20.2
 - Base Deficit: 6.1
- Mother and baby were discharged at the 48-hour mark.

Remimazolam Neonatal Sedation Warning¹: Monitor neonates exposed to benzodiazepines during pregnancy or labor for signs of sedation and monitor neonates exposed to benzodiazepines during pregnancy for signs of withdrawal and manage these neonates accordingly.



Remimazolam Anxiolysis for Epidural Placement

James W. Parry, MD¹, Tyson Hamilton, MD¹, Courtney M. Hood, MD¹

¹San Antonio Uniformed Services Health Educations Consortium (SAUSHEC), San Antonio, TX



Discussion

- Remimazolam was used for this case due to its favorable hemodynamic effects, fast onset and recovery time. Most laboring patients do not desire amnesia at the time of birth, another benefit of remimazolam over midazolam.
- To date, there is one additional case study utilizing Remimazolam for labor epidural anxiolysis without significant side effects to mother or fetus⁴.

Safety Considerations:

- Placental transfer is likely. Although remimazolam is rapidly metabolized in adults, tissue esterases are functionally immature in fetuses and the expression level is 7% that of adults.³ Consider fetal heart tone monitoring while administering this drug.
- Remimazolam has been used safely and effectively for the prevention of intraoperative nausea and vomiting during cesarean section, although fetal sedation was not assessed.
- Prior to administration of this medication, a risk/benefit discussion should be conducted with the patient, GS&O, and perhaps the Pediatric team if delivery is imminent. Further studies exploring the safety profile of remimazolam in pregnant patients should be considered.

References

1. Schüttler J, Eisenried A, Lerch M, Fechner J, Jeleazcov C, Ihmsen H. Pharmacokinetics and Pharmacodynamics of Remimazolam (CNS 7056) after Continuous Infusion in Healthy Male Volunteers: Part I. Pharmacokinetics and Clinical Pharmacodynamics. Anesthesiology. 2020 Apr;132(4):636-651. doi: 10.1097/ALN.0000000000003103. PMID: 31972655.
2. Hu Q, Liu X, Wen C, Li D, Lei X. Remimazolam: An Updated Review of a New Sedative and Anaesthetic. Drug Des Devel Ther. 2022 Nov 15;16:3957-3974. doi: 10.2147/DDDT.S384155. PMID: 36411859; PMCID: PMC9675580.
3. Shi D, Yang D, Prinssen EP, Davies BE, Yan B. Surge in expression of carboxylesterase 1 during the post-neonatal stage enables a rapid gain of the capacity to activate the anti-influenza prodrug oseltamivir. J Infect Dis. 2011 Apr 1;203(7):937-42. doi: 10.1093/infdis/jiq145. PMID: 21402544; PMCID: PMC3068026.
4. Hyers B, Finch S, Katz D. Remimazolam administration for severe anxiety during a neuraxial block placement in active labor. Int J Obstet Anesth. 2024 Aug;59:104214. doi: 10.1016/j.ijoa.2024.104214. Epub 2024 May 16. PMID: 38833879.