

Optimizing Sedation in the Emergency Department: A Prospective Clinical Cohort Study of Effectiveness and Safety of Remimazolam

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Background:

The demand for fast and safe procedural sedation has risen for both invasive and non-invasive procedures in the emergency department (ED). This study aims to 1) investigate the safety of Remimazolam as analgo-sedation, 2) evaluate percentage of patients having amnesia and the quality of sedation, and 3) whether the sedation was successful and effectively managed pain for procedures in the ED.

Methods:

This prospective clinical cohort study was performed by registered nurse anaesthetists in the ED at Aalborg University Hospital during 20th of February through 31 May 2024. Outcome measures were 1) adverse effects of Remimazolam, i.e., patients requiring airway management, antidotes, or correction of life-threatening side effects, 2) proportion of patients reporting adequate sedation or amnesia post-procedure, and 3) proportion of patients reporting adequate pain or anxiety relief.

Results:

Totally 68 patients (age 59 (interquartile range (IQR) 35;72), 58% female) were sedated using Remimazolam with a median dose of 7.5 mg (IQR 5;10 mg). A quarter (24 %) of the patients had an ASA physical status classification of 3-4. Most patients (97% (n = 66)) had no or mild respiratory problems during sedation. Two patients had transient severe respiratory problems following sedation. Both patients had received large doses of opioid prior to the Remimazolam sedation. One patient needed bag valve mask ventilation, and one patient needed an opioid antidote. Patient satisfaction was high, with 97% having amnesia for the procedure, or scored satisfied with the sedation and pain management. Almost all (89%, n = 31/35) joint reductions were successfully performed under sedation with Remimazolam. In over half of the patients who would have

otherwise required general anaesthesia in an operating room (57%, n = 20/35), sedation with Remimazolam was sufficient to perform the procedure in the ED.

Conclusion: The administration of Remimazolam in the ED was a safe and effective sedative treatment with high patient satisfaction levels. In future studies, the next step could be to evaluate if Remimazolam administration by nurses and doctors without specialized anaesthetic training is as safe and effective.

Keywords: Anesthesia and Analgesia, Benzodiazepines, Joint Dislocations, Fractures, Bone, Remimazolam

