Paradoxic Reaction To Midazolam Durıng Intravenous Sedation

M Inal, N Celik

Citation

M Inal, N Celik. *Paradoxic Reaction To Midazolam Durıng Intravenous Sedation*. The Internet Journal of Anesthesiology. 2007 Volume 16 Number 1.

Abstract

Patients treated with midazolam rarely develop paradoxical reactions. These reactions are restlessness, agitation, anxiety and sometimes aggressive behavior. In this case report we describe paradoxic reaction after midazolam administration and the treatment with flumazenil.

INTRODUCTION

Midazolam is a benzodiazepine agonist that has a rapid onset and fast distrubution and that causes few cardiovascular or respiratory effects. Midazolam is water soluble and has a low incidence of venous irritation after intravenous injection ([1]). These properties make midazolam a good choice for sedation and for induction and maintenance of anesthesia ([2]). Paradoxical excitement occurs in less than 1 % of all patients receiving midazolam ([3]).

In this case report, we describe a patient who developed a paradoxical reaction to midazolam that was reversed with a small dose of flumazenil.

CASE REPORT

A 20-yr-old man with no previous medical history, known drug usage and drug allergy enrolled surgery for meniscopathy. The physical examination and laboratory tests were normal. After presenting to the operating room; electrocardiogram, pulse oximetry, non-invasiv arteriel blood pressure and saturation were monitored. 0.9% isotonic solution was given prior to initiation of spinal anesthesia. A 22-gauge pencil-point spinal needle was then inserted at the L 4-5 interspace into the subarachnoid space and 15 mg of plain bupivacaine 0.5% was injected. Before surgical procedure 2 mg midazolam was given intravenously. 10 minutes after starting the surgical procedure, the patient became agitated, anxious and restless. He had no pain. Vital signs were normal and peripheral oxygen saturation was 99 %. An additional 3 mg of midazolam was administered intravenous in divided doses over the next 10 minutes. No improvement in patient symptoms were observed, only the patient cooperation was poor. After the end of the surgical procedure the patient transferred to the postanesthesia care unit. After arrival, he continued to be restless and agitated but stil denied having any pain. Vital signs were normal. Flumazenil 0.2 mg was administered and the patient' s agitation abated completely and he fell asleep. One minute later, a second dose of 0.2 mg was administered and the patient became communicative. After 2 days without complications the patient discharge from hospital.

DISCUSSION

Paradoxical reactions to benzodizepins have been reported as far back as 1961, when Boyle and Tobin described a patient who manifested increased aggressiveness when treated with oral chlordiazepoxide ([4]).

Patients treated with midazolam rarely develop paradoxical reactions characterized by restlessness, agitation, anxiety and sometimes aggressive behaviour. The reported incidence of paradoxical reactions with midazolam appears to be small. The incidence seems to be more common in the younger age groups; females appear to be more affected than males ([5,6]).

The personality of the individual may affect responses to benzodiazepines. In 1969 DiMascio, Shader and Harmatz suggested that these reactions are not really paradoxical but are predictable behaviors in individuals who have a history of poor impulse control or previously aggressive and destructive behavior ([7]).

Environment may play a part in paradoxical reactions. When sedation is relatively deep and a patient becomes worried about losing consciosness, he or she may strungle to keep

awake. This type of behavior was seen in our patient ([8]).

Abnormal movements may occur due to hypoxia or hypercarbia or when a patient responds to airway obstruction. In our patients there was no respiratuar distress and peripheral oxygen saturation was normal. Cold may be precipitate abnormal movements, but his temperature was normal. Another possibility is an overdose of local anesthetics, the dose was in the therapeutic range and the sensoriel level was maximum T12, and if local anesthesia were the cause the paradoxical reactions would have occurred much earlier and would not been terminated by flumazenil injection.

Flumazenil is a benzodiazepine antagonist that can effectively reverse benzodizepine-induced sedation, hyposis and respiratory depression. Several previos reports have been demonstrated successful treatment of benzodizepine-induced paradoxical reactions with flumazenil([9,10]).

This case report demonsrates that paradoxical reactions to midazolam can be treated with flumazenil without reversing the amnestic and sedative effects of the benzodiazepine. In conclusion we recommended flumazenil for treating paradoxical reactions with midazolam.

CORRESPONDENCE TO

Mehmet Turan Inal, M.D. Anesthesiology and Reanimation Consultant Etimesgut Military Hospital Ankara Turkey Tel: +903122491011 Fax: +903122444977 e-mail: mehmetturaninal@yahoo.com

References

1. Khanderia U, Pandit SK. Use of midazolam hydrochloride in anesthesia. Clin Pharmacol 1987;6:533-47
2. Rodrigo MRC, Clark RNW: A study of intravenous sedation with diazepam and midazolam for dentistry in Hong Kong Chinese. Anaesth Intensive Care 1986;14: 404-411
3. Physician's desk reference. Montvale, NJ: Medical economics, 1995: 2066-7
4. Boyle D, Tobin J:Pharmaceutical management of behavior disorders: chlordiazepoxide in covert and covert expressions of aggression. J Med Soc NJ 1961;58:427-429
5. Hall RCW, Zisook S: Paradoxical reactions to benzodiazepines. Br J Clin Pharmacol 1981;11:99-104
6. Lischfield B: Complications of intravenous diazepam-an overall assessment of 16,000 cases and detailed studies of 6,000 cases. Dent Anaesth Sed, 1981;10:7-24
7. DiMascio A, Shader RI, Harmatz J: Psychotropic drugs and induced hostility. Psychosomatics 1969;10:46-47
8. Lischfield B: Complications of intravenous diazepam-adverse phychological reactions Anesth Prog 1980;27:175-183
9. Rodrigo CR. Flumazenil reverses paradoxical reaction with midazolam. Anesth Prog 1991;38:65-68
10. Honan VJ. Paradoxical reaction to midazolam and control with flumazenil. Gastrointerest Endosc 1994;40:86-88

Author Information

Mehmet Turan Inal, M.D.
Anesthesiology and Reanimation Consultant, Etimesgut Military Hospital

Nilgun Sahin Celik, M.D.
Anesthesiology and Reanimation Consultant, Etimesgut Military Hospital