



RESPIRATORY ARREST DURING MONITORED ANAESTHESIA CARE

Dr. Vishal Vashist

MD Anaesthesiology, Civil Hospital, Chowari, Chamba, Himachal Pradesh

Dr. Bhanu Gupta*

MD Anaesthesiology, Senior Resident, Department of Anaesthesiology, Dr. RPGMC Kangra at Tanda *Corresponding Author

ABSTRACT

We report a 72 year-old, American Society of Anaesthesiologist Class II(ASA II), male patient scheduled for burr hole and evacuation for Chronic Sub Dural Haematoma. He went into a 70 minute apnea and complete muscle paralysis after receiving midazolam(1.0 mg) and fentanyl (50 µg) intravenously for sedation and analgesia necessitating respiratory support until recovery. **Conclusion** : Midazolam and fentanyl should be used with utmost caution in elderly as combination of both can lead to respiratory arrest necessitating respiratory support until full recovery.

KEYWORDS : Monitored anaesthesia care, Midazolam, Fentanyl, respiratory arrest

Introduction

Monitored anaesthesia care (MAC) has been described as a specific anaesthesia service for diagnostic or therapeutic procedures performed under local anaesthesia along with sedation and analgesia, titrated to a level that preserves spontaneous breathing and airway reflexes. The use of small doses of midazolam and fentanyl is standard practice during monitored anaesthesia care for providing sedation and analgesia. Although both midazolam and fentanyl are known to produce respiratory depression in the occasional patient¹.

Case Report

A 72 year-old, American Society of Anaesthesiologist Class II (ASA II), male patient weighing 64 kg was scheduled for burr hole and evacuation for Chronic Sub Dural Haematoma in the supine position. No abnormality was detected during the clinical examination and all his investigations were within acceptable limits. Plan of anaesthesia is monitored anaesthesia care with dexmedetomidine infusion. On the operating table, basic noninvasive blood pressure (NIBP) monitor, pulse-oximeter and electrocardiogram(ECG) monitor were attached to the patient. The vitals heart rate (HR) and blood pressure (BP) were 64/min and 122/68 mmHg respectively. The patient was administered 1.0 mg of midazolam and 50 µg of fentanyl IV to relieve the anxiety and provide analgesia. But before starting the dexmedetomidine infusion the patient's respiratory pattern gradually changed, the oxygen saturation started falling and he had stopped breathing. His respiration was immediately supported by positive pressure mask ventilation. Our immediate diagnosis was respiratory depression secondary to midazolam and/or fentanyl. The patient's pupils were 2 mm and reactive to light. It was now decided to withhold the dexmedetomidine infusion and pass a #3 laryngeal mask airway (LMA) and commence intermittent positive pressure ventilation with a tidal volume of 380 ml, respiratory rate of 12/min and a mixture of 2:1 each of air and oxygen. Inhalational agent Isoflurane is started and surgeon is asked to perform the surgery Oxygen saturation remained between 98–100% and end tidal CO₂ 35–40 mmHg. Throughout the surgery for nearly 60 minutes patient does not show any respiratory effort and muscle relaxant was not administered to the patient, after 70 min the patient started making weak respiratory efforts and over the next 10 minutes, he started breathing adequately (tidal volume 300–360 ml) The LMA was soon removed he was transferred to the recovery room for further observation. The patient made an uneventful recovery and was discharged from hospital after 3 days.

Discussion

Midazolam is frequently used in combination with opioids for

anaesthesia and sedation². Though respiratory arrest after low dose fentanyl alone has been rarely reported³, depression is most common when combined with a sedating agent such as midazolam or propofol^{4,5}. Our patient had also received a combination of midazolam and fentanyl 2-3 minutes before she went into respiratory arrest which was over one hour. This unexpectedly long duration of respiratory depression after low dose of drugs may be explained by the fact that fentanyl is known to competitively inhibit metabolism of midazolam by cytochrome P450 3A4 (CYP3A4) activity² leading to prolonged apnea¹. Midazolam by itself is known to possess a mild muscle-relaxant property, but it is mediated at the spinal cord level, not at the neuromuscular junction.⁶ Inadvertent administration of muscle relaxants was ruled out as infusion of dexmedetomidine was made and only the two drugs in question (midazolam and fentanyl) were prepared and administered before he went into apnea. As per operating theatre policy, all syringes of previous cases are always discarded. No other drug was administered which could have led to muscle paralysis. Rashid M Khan et al reported a similar case when complete muscle paralysis and respiratory arrest occur during day care surgery after administration of midazolam and fentanyl⁷.

Conclusion

Midazolam and fentanyl should be used with utmost caution in elderly as combination of both can lead to respiratory arrest necessitating respiratory support until full recovery.

REFERENCES

1. Bailey PL, Pace NL, Ashburn MA, Moll JWB, East KA, Stanley TH. Frequent hypoxemia and apnea after sedation with midazolam and fentanyl. *Anesthesiology* 1990; 73:826–30.
2. Hase I, Oda Y, Tanaka K, Mizutani K, Nakamoto T, Asada A. I.V. fentanyl decreases the clearance of midazolam. *Br J Anaesth* 1997; 79:740–3.
3. Topacoglu H, Karcioğlu O, Cimrin AH, Arnold J. Respiratory arrest after low-dose fentanyl. *Ann Saudi Med* 2005; 25:508–10.
4. Jagoda AS, Campbell K, Karas S. Clinical policy for procedural sedation and analgesia in the emergency department. *Ann Emerg Med* 1998; 31:663–7.
5. Proudfoot J. Analgesia, anaesthesia, and conscious sedation. *Emerg Med Clin North Am* 1995; 13:357–79.
6. Morgan Jr GE, Mikhail MS, Murray MJ. *Nonvolatile anesthetic agents*. In: *Clinical Anesthesiology*. 4th ed. Philadelphia: McGraw-Hill Companies, Inc., 2006.
7. Khan RM, Kaul N, Neelakanthan PH. Fentanyl and Midazolam induced Respiratory Arrest and Neuromuscular Paralysis during Day Care Surgery: A case report. *Sultan Qaboos Univ Med J*. 2010 Aug; 10(2):255–7.