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Further Data on Sexual Fantasies During Benzodiazepine Sedation

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Following an incident early in the investigational life of midazolam the author became aware that claims of sexual harassment could occur following the use of sedative doses of this drug, in circumstances where no such event could have happened. Three such cases reported in 1986[1] together with the findings of a follow-up of around 3000 patients who had been sedated with midazolam or diazepam for either dental procedures or oral endoscopy. This revealed a further four cases with sedation techniques and six during the slow induction of anaesthesia which occurs with midazolam.

Since the publication of this paper the author has received details of seven other such claims, four of which could not have happened. All of these could be authenticated as they came from colleagues or from legal advisers. All occurred in the British Isles. To give an overall picture, details of all claims of sexual assault or harassment are given here: some of these have been described previously.

Case Reports

There were 11 definite instances of claims of a sexual act in circumstances where this could not have happened as others were in the room continually with the subject. All occurred in woman aged 18–49. Four occurred in dental practice, three in general surgical cases, two having oral endoscopy. One was a volunteer having blood sampling for pharmacokinetic studies and one was sedated in the intensive care unit. Usually these events were reported for three months and this could have been prompted by a similar report in the lay press (or by a feature article).

Of these 11 patients, it was possible in seven to see some connection between the stimulus and the complaint made by the patients (Table 1). There was no obvious connection in the remaining four (ITU sedation, blood sampling, removal of dressing and local block), but some routine event such as bending over the patient or ascultating the chest could have been misconstrued. It was not possible to locate the time of occurrence of the "assault" in any of the patients as the amnesic and sedative effects of the benzodiazepines led to complete confusion as to the consequence of events.

In ten cases the drug used was midazolam and in all of these the dose was in excess of 0.1 mg kg^{-1}.

Details also came to light of three other reported incidents of sexual assault under midazolam (2) or diazepam (1), but in none of these could one definitely exclude the possibility of this being a genuine complaint.

Incidence

There are no further available data which could throw any light on this. The previous report showed no incident of sexual fantasies in 1425 patients having a small dose of either midazolam or diazepam (equivalent of 0.07–0.10 mg kg^{-1} midazolam). Excluding the anaesthesia cases the incidences with large doses was 4/745. There were a further four additional patients in the latter group who had definite fantasies or altered affect but not of a sexual nature.

Comment

There is absolutely no doubt that some patients have complained of sexual events occurring under the influence of sedative doses of midazolam and diazepam in circumstances where such an event could not have occurred. All of the cases reported have had what the author would consider to be a large dose of benzodiazepine, but one must remember that there is great individual variation in

response to both drugs. This is more marked in young patients[2]. The first cases, who received large doses occurred during the early "dose-finding" phase of the clinical use of midazolam, and produced an incidence of about 1 in 200 events. Increasing experience has shown that, except in the young, such doses are rarely necessary.

It cannot escape notice that all 14 instances recorded have occurred in women. No explanation can be offered for this but the evidence presented here would strengthen the recommendation that such patients should not be sedated, whether in a dental surgery, hospital outpatient or ward without a third person being present.

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TABLE 1

A possible association between the complaint and an event occurring during benzodiazepine sedation.

No.	*STIMULUS*	*COMPLAINT*
2	Dental sucker	Oral sex
2	Oral endoscopy	Oral sex
1	Tight bra	Fondling breasts
1	Swab between legs	Sexual assault
1	Venepuncture : squeeze fist	Induced masturbation

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Anterograde Amnesia as a Possible Postoperative Complication of Midazolam as an Agent for Intravenous Conscious Sedation

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Anterograde amnesia is often considered to be a beneficial effect of intravenous conscious sedation. The recently introduced benzodiazepine, midazolam, has associated with its administration a significant anterograde amnesic period. In the case presented here, a healthy young female presented for third molar extraction under midazolam conscious sedation and local anesthesia. After uncomplicated removal of the teeth, it was noted that the patient had swallowed the postsurgical gauze packs. Efforts at recovery of the gauze packs were futile. Follow-up discussion with the patient revealed a complete lack of recall of all events occurring for up to an hour or more after the administration of intravenous midazolam. The need for written and oral postopertative instructions to both the patient and his/her escort is emphasized.

Since the introduction of midazolam (Versed) as an agent for intravenous conscious sedation, there have been many reports on its ability to produce anterograde amnesia.[1,2] Anterograde amnesia is a lack of recall of events occurring from the time of injection of a drug onwards. This is to be distinguished from retrograde amnesia, a lack of recall of events occurring before the drug's administration. Anterograde amnesia is an accepted pharmacologic action of a number of commonly used intravenous sedative agents, most notably the

benzodiazepine diazepam and the anticholinergic scopolamine. Reports have indicated that the duration of midazolam-induced anterograde amnesia may be longer than that produced by diazepam.[3,4] This is usually considered to be beneficial to the procedure, as it provides the patient with the "feeling" of being unconscious (of not being able to recall what has happened during a procedure) without the added risks attendant upon general anesthesia.

Anterograde amnesia can also present a risk to the otherwise well-recovered patient after conscious sedation. This case report demonstrates the possible hazards of the aspiration of swallowing of surgical gauze packs after third molar extraction when performed under local anesthesia with intravenous midazolam as a conscious sedation technique. In this case, a 32-year-old female, following the uncomplicated extraction of her third molars, swallowed her gauze packing and on subsequent questioning had no recollection of the incident or of any postoperative instructions that had been given to her verbally less than five minutes before.

CASE REPORT

A 32-year-old female classified by the American Society of Anesthesiology (ASA) guidelines as a class 1 risk reported for routine extraction of her remaining third molars (#16, 17, 32). Conscious sedation was used to alleviate the patient's anxieties over the impending procedure. Midazolam was chosen for its anxiolytic properties, amnesic effect, and its short duration of action.

Preoperative vital signs were recorded: blood pressure 108/68 mm Hg; heart rate 54 bpm with a regular rhythm; and respirations of 15 per minute. The patient's temperature (oral) was 98.4 F (36.9 C) with a weight of 62 kg. According to University protocol, monitors were placed, including an ECG, automatic blood pressure cuff, and pretracheal stethoscope. Humidified nasal oxygen was administered via a nasal cannula at a flow rate of 5 L/minute. A continuous intravenous infusion was started in the right antecubital fossa with a 21 gauge indwelling catheter. The infusate was 5% dextrose in water (D5W) (250 mL). Midazolam, diluted in D5W to a final concentration of 2 mg/mL, was titrated at a rate of 1 mL per minute into a rapid IV drip. (Note: In November 1987 [four months after this case], Roche Laboratories, the manufacturer of midazolam, sent an advisory to doctors suggesting use of a 1 mg/mL dilution of midazolam.[5]) Over a six-minute period, midazolam was carefully titrated until the patient achieved the desired level of sedation (slow response to verbal command, relaxed appearance). Ten milligrams of midazolam was administered to achieve this effect. Five milliliters of local anesthetic (2% mepivacaine/1:20,000 levonordefrin) was next administered with the patient receiving bilateral inferior alveolar nerve blocks as well as a left posterior superior alveolar and left greater palatine nerve block to anesthetize the surgical sites.

All extractions proceeded without complication. Time elapsed for extraction of the three teeth was 15 minutes. The patient was monitored continuously during this period as well as during the recovery period. At the conclusion of the surgery, two folded 2″ × 2″ gauze packs were placed into the patient's mouth. She was instructed to bite firmly on them and that the procedure was completed. The patient was fully responsive and acknowledged all statements with verbal comments and head gestures. At this point, 40 minutes had elapsed from the completion of the administration of midazolam to the removal of the catheter. The patient appeared awake and alert. Within minutes the patient complained of a "lump in my throat." Upon examination no gauze packing could be found in the patient's mouth. The patient had absolutely no difficulty breathing and was exchanging air normally and demonstrating no anxiety towards the situation. Auscultation of the lungs demonstrated bilaterally equal and normal breath sounds. No signs of airway obstruction were noted. Other than the feeling of a lump in her throat, the patient had no complaints or distress.

The decision was made to attempt direct laryngoscopy in order to vitalize the hypopharynx, vocal chords, and the upper esophagus. The patient was asked to rinse and gargle with a 5% viscous lidocaine solution, after which direct laryngoscopy was performed. Upon visualization of this area, which was easily performed with little discomfort to and minimal show of distress by the patient, no gauze or any other foreign material was observed. The patient was readily able to swallow water and was otherwise well recovered from her procedure. The patient and her escort were advised to immediately contact the dentist if the feeling should become noticably more uncomfortable or should the "lump" still be present the following morning. It was concluded that the gauze packs had been swallowed by the patient and had entered into the gastrointestinal tract.

Upon contacting the patient that same evening by telephone, she had no recollection of any of the extractions taking place, or of the incident of swallowing the gauze packs, the laryngoscopy, or of any of the postoperative instructions that were originally given to her orally. The laryngoscopy occurred, and the oral instructions were given to the patient, more than one hour after the administration of the midazolam.

DISCUSSION

With the increased frequency of use of midazolam as an agent for intravenous conscious sedation, it is evident that its profound amnesic effects in some patients will have to be addressed. Written postoperative instructions should always be provided. Furthermore, the patient "escort" should always be informed of any important procedures or warnings that need to be followed. Although the above is considered to be the current standard of care in conscious sedation, the use of agents (e.g., midazolam) that may cause a lack of recall for periods of time after the completion of the dental procedure requires a redoubling of our warnings to the patient and escort in the form of both written and verbal instructions. Post-treatment contact with the patient (via telephone) is also recommended as a means of reassuring, both the patient and the doctor, that the recovery phase is proceeding well.

The use of drugs capable of causing intense amnesia coupled with clinically accpetable local anesthesia may yield more cases like the one described here. A patient who is fully alert in the postoperative period (rapidly responsive verbally) may be entirely unaware that gauze packs were even placed in his/her mouth for hemostasis. Swallowings, particularly aspiration of the gauze packs, are potentially very serious complications in this situation.

Potential solutions to this problem include: use of 2″ × 2″ gauze packs with a piece of string (i.e., dental floss) attached to them with its end remaining out of the patient's mouth; use of 3″ × 3″ or larger gauze packs that would be more difficult to swallow (but if swallowed would be even more likely to produce a significant obstruction); or never leaving a patient unattended in the immediate postoperative period when any type of anesthesia (local/general) or sedation that may compromise consciousness or sensation within the mouth has been administered.

The dosage of midazolam (10 mg) administered to this patient was carefuly titrated to the desired clinical effect, as described above. The comparable dosages of midazolam and diazepam, though not precisely known at this time, have been variously estimated at 1:1.5 to 1:4.[2-5] Using these figures, the dosage of midazolam administered to this patient would equate to a diazepam dosage ranging from 15–40 mg. It must be restated that the midazolam received by this patient was carefully and slowly titrated to a light to moderate level of sedation (i.e., patient responsive to verbal command).

Additional clinical experience with its new intravenous sedative agent will better enable the clinician to derive more precise and desirable clinical actions from midazolam and to minimize its less desirable effects.

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