Manipulation under sedation in the accident and emergency department

S.M. HEWITT & R.H. HARTLEY

Department of Accident and Emergency Medicine and Department of Orthopaedic Surgery, University Hospital, Nottingham

SUMMARY

The Royal College of Surgeons of England recently published guidelines for sedation by non-anaesthetists. The report emphasizes sedation for endoscopy and dental surgery, but the recommendations are equally relevant to accident and emergency (A&E) medicine.

Current sedation practice for orthopaedic manipulations was determined by questionnaire in 58 A&E and orthopaedic junior staff in one teaching and one district general hospital. Of the 50 doctors who completed the questionnaire, 14 (28%) respondents made an inadequate pre-sedation assessment. Over half were unable to name the antagonist to benzodiazepine drugs. Eleven (22%) doctors administered supplemental oxygen to all their patients, 12 (24%) did not consider it necessary. Pulse oximetry was used for patient monitoring by one respondent (2%).

None of the junior staff had received any formal training in sedation techniques. Thirty-one (62%) had attended a resuscitation refresher course within the last year.

These results emphasize the need for training in sedation techniques for A&E and orthopaedic juniors and the importance of appropriate supervision.

Key words: monitoring, sedation, training

INTRODUCTION

The management of isolated long bone fractures and dislocations frequently requires prompt manipulation, which is essential in the presence of neurovascular compromise and to avoid pressure necrosis of the skin. These manipulations are usually performed by junior medical staff using a variety of sedation techniques. Sedation is used to reduce patient anxiety and overcome muscle spasm associated with manipulation. Patient sedation is not

without risk however, particularly depression of cardiorespiratory function.

The report of the working party on guidelines for sedation by non-anaesthetists¹ makes recommendations about pre-sedation assessment, the appropriate location for sedation, monitoring and resuscitation facilities, drug administration, the role of supplemental oxygen, and training for doctors performing procedures under sedation.

METHODS

An anonymous questionnaire was sent to 58 junior doctors from the departments of A&E and orthopaedics in both a teaching and a district general hospital regarding their usual sedation practice for urgent manipulations of long bone fractures and dislocations in the A&E department. These included senior house officers (SHOs) in the last month of their attachment and all grades up to and including senior registrar. Fifty doctors completed the questionnaire, a response rate of 86%.

The written questionnaire enquired about the following.

- (1) The pre-sedation assessment made prior to administration of sedative agents.
- (2) The location, equipment and personnel required.
- (3) Drugs or combinations of drugs usually used together with route of administration.
- (4) Whether supplemental oxygen is administered.
- (5) The name and dose of opiate and benzodiazepine antagonists.
- (6) Confidence to manage a respiratory arrest.
- (7) Extent of training.

RESULTS

When addressing fitness for sedation, 14 (28%)

Correspondence:
S.M. Hewitt,
Registrar, Accident
and Emergency
Department,
University Hospital,
Nottingham NG7
2UH, UK

respondents failed to make any assessment of their patients' cardiorespiratory status before administering sedative drugs. Procedures under sedation were performed in a variety of locations. Twenty-three (46%) respondents selected the resuscitation room, 14 (28%) an A&E department cubicle and 13 (26%) a plaster room. Forty-six (92%) respondents ensured that resuscitation equipment was available and 47 (94%) requested the presence of a nurse.

Entonox was used by 11 (22%) respondents. Intravenous benzodiazepines (diazepam or midazolam) were administered by all with an equal split between the two. Twenty (40%) doctors used combinations of intravenous opiates and benzodiazepines. Secure intravenous access was obtained by plastic cannula by all but five (10%) doctors who were content with a butterfly needle.

Three (6%) doctors did not know the name of an opiate antagonist and 27 (54%) were unable to name the antagonist to benzodiazepines. The correct doses for naloxone and flumazenil were not known in 22 (44%) and 44 (88%) cases respectively.

Supplemental oxygen was always given by 11 (22%) respondents, sometimes by 27 (54%) and never by 12 (24%) doctors. Pulse oximetry was used routinely by only one respondent (2%).

Four (8%) of those questioned were confident in their ability to manage a respiratory arrest. Thirty-one (62%) had attended a resuscitation refresher course within the last year. Almost all doctors felt largely self-taught although three (6%) had previous anaesthetic experience.

DISCUSSION

Little is known about current sedation practice in the A&E department. Safe practice must prevail in spite of an abundance of distractions. Pre-sedation assessment was inadequate in many cases, this could be improved by using a pre-sedation checklist similar that recommended for use prior to endoscopy.¹ Several doctors preferred to perform manipulations under sedation in a A&E department cubicle or plaster room. When these locations are chosen, adequate resuscitation equipment should be available and should be checked regularly. The role of the assistant, usually a trained nurse, is exclusively for patient monitoring and the assistant should not be expected to take part in the manipulation.

Reliable intravenous access should be secured by plastic cannula prior to the administration of any sedative agent and most of the doctors complied

with this. The preferred benzodiazepine is midazolam as it has a shorter half life than diazepam and has no active metabolites.¹ As the injuries requiring manipulation are painful, it is appropriate that combinations of opiates and benzodiazepines are used, as sedation alone does not provide analgesia.

However, it is important that the synergistic effect of combinations should be recognized and the drugs titrated slowly against the patient's level of sedation.² Parenteral non-steroidal agents may be considered as an alternative to opiates in some cases.

Oxygen saturation as measured by pulse oximetry has been shown to fall during sedation for endoscopy,³ and supplemental oxygen and monitoring by pulse oximetry has been recommended.⁴ However, oximetry is of limited value in indicating hypoventilation when the concentration of inspired oxygen is high⁵ thus it is vital that basic observations of respiratory rate, pulse, blood pressure and conscious level be maintained throughout the procedure and recovery period.

Sedation for manipulations is a generally safe but potentially hazardous procedure, yet there were a few doctors who did not feel confident in their ability to manage a respiratory arrest and many were unfamiliar with antagonist agents. This reflects a lack of training and a reliance on 'see one, do one' methods.

These results demonstrate that patient assessment and monitoring is inadequate in many cases. There is a lack of confidence in managing adverse drug reactions including respiratory arrest. This has important implications for training and supervision.

The authors believe that sedation techniques should be included in induction teaching for A&E and orthopaedic juniors and that competence should be assessed by senior staff after a period of supervision. All doctors administering sedative agents must be confident in their ability to manage a respiratory arrest and should have the opportunity of resuscitation refresher courses.

ACKNOWLEDGEMENTS

Mr G. Geutjens Orthopaedic Registrar, Orthopaedic Surgery Derbyshire Royal Infirmary.

REFERENCES

1. Royal College of Surgeons of England (1993) Commission on the provision of surgical services. *Report of the Working Party on Guidelines for Sedation by Non-*

- Anaesthetists. Royal College of Surgeons of England, London.
2. Ben-Schlomo I., Abd-EL-Khalim H., Ezry J., Zohar S., Tverskoy M. (1990) Midazolam acts synergistically with fentanyl for the induction of anaesthesia. *British Journal of Anaesthesia* **64**, 45–57.
 3. Alturi R. & Ravery M.J.R. (1978) Effect of intravenous diazepam on arterial oxygen saturation levels during esophagoduodenoscopy. *Gastrointestinal Endoscopy* **24**, 191.
 4. Bell G.D., McCloy R.F., Charlton J.E., Campbell J.E., Dent N.A., Gear M.W.L., Logan R.F.A. & Swan C.J.H. (1991) Recommendations for standards of sedation and patient monitoring during gastrointestinal endoscopy. *Gut* **32**, 823–827.
 5. Hutton P., Clutton-Brock T. (1993) The benefits and pitfalls of pulse oximetry. *British Medical Journal* **307**, 457–458.