LETTERS TO THE EDITOR

Genital examination under ketamine sedation in cases of suspected sexual abuse

EDITOR,—We were surprised by the choice of ketamine as a sedative agent in genital examination in cases of suspected sexual abuse.¹ Ketamine is an unusual anaesthetic agent. It is a derivative of phencyclidine ('Angel Dust') and produces a dissociated anaesthetic state; catalepsy with profound analgesia. The drug interferes with the patient's ability to organise thoughts and understand the environment during emergence from anaesthesia. Although less common than in adults, unpleasant emergence phenomena are not rare in unpremedicated children (8% under 16 years, 24% over 16 years of age²). In addition, ketamine may cause prolonged recurrent hallucinations lasting up to a year in children.³ An antialagogue is an important adjuvant to block the increased salivation caused by ketamine, but atropine has the disadvantage of increasing the incidence of unpleasant dreams.⁴

These psychomimetic properties tempered the initial enthusiasm for ketamine in the anaesthetic community and have tended to limit its use to those situations where the analgesic, sympathomimetic and cataleptic properties are useful, such as in the dressing of burns and the management of trauma and mass casualties.

We feel that ketamine is not a suitable agent for the difficult problem of examining suspected victims of child sexual abuse because emergence phenomena may result in the child interpreting the examination itself as sexual abuse. We would suggest that if ketamine is used, an agent with sedative and amnesic properties such as a benzodiazepine should be added as this has been shown to reduce the incidence of emergence phenomena.⁴ Although ketamine allegedly does not depress airway reflexes, aspiration has been reported⁵ so the child should be fasted before the procedure.

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- 1 Harari MD, Netzer D. Genital examination under ketamine sedation in cases of suspected sexual abuse. *Arch Dis Child* 1994; 70: 197-9.
- 2 Sussman DR. A comparative evaluation of ketamine anaesthesia in children and adults. *Anesthesiology* 1974; 40: 459-64.
- 3 Meyers EF, Charles P. Prolonged adverse reactions to ketamine in children. *Anesthesiology* 1978; 49: 39-40.
- 4 Bovill JG, Coppel DL, Dundee JW, Moore J. Current status of ketamine anaesthesia. *Lancet* 1971; i: 1285-8.
- 5 Taylor PA, Towey RM. Depression of laryngeal reflexes during ketamine anaesthesia. *BMJ* 1971; ii: 688-9.

EDITOR,—I sympathise with the need to sedate children who must undergo distressing genital examinations, yet 'ketamine sedation' is not as safe as Harari and Netzer¹ suggest and is not necessarily the best technique.

Although ketamine has a good safety record, the potentially disastrous side effects of laryngospasm² and apnoea³ cannot be dismissed just because they are rare. Green *et al* found that laryngospasm occurred once in a hundred or so cases,² but the incidence may be greater if patient selection is poor. Whoever administers ketamine, or indeed any drug which causes loss of consciousness, must be capable of managing the predictable complications. The doctor must have skills in airway management, there must be adequate assistance, tools (artificial airways, laryngoscopes, suction, etc), drugs (suxamethonium, atropine among others), monitoring apparatus and probably most important of all, the judgment that is gained by training and experience. These principles are, one hopes, accepted by those who use ketamine regularly² but they may not, I fear, be appreciated by others who use ketamine infrequently.

Taylor and Towey have demonstrated that radio-opaque dye placed in the pharynx of adults passes easily into the lungs during anaesthesia.⁴ The airway, therefore, should not be assumed to be secure from aspiration of gastric contents and it is safer to follow sensible principles of fasting. The protective airway reflexes may be able to cope with small volumes of gastric fluid but they are likely to be overwhelmed by large volumes. Gastric contents are difficult to predict and aspiration of solid matter into the lungs is particularly dangerous.

Airway aside, breathing and oxygenation are usually adequate, but this must not be assumed. Monitoring by pulse oximetry is mandatory for all patients under anaesthesia and deep sedation. Radiologists,⁵ gastroenterologists,⁶ dentists,⁷ and paediatricians^{8,9} have all published their guidelines on safe practice for sedation and paediatricians should be aware they will be vulnerable to criticism if a child is damaged by hypoxia.¹⁰ Anaesthesia is managed best by anaesthetists.

Is ketamine a sedative or an anaesthetic? In my view, although it has unique properties, ketamine should be regarded as an anaesthetic, if only for safety reasons. Small doses may indeed be truly sedative but anaesthesia is easily caused by increasing the dose. One mg/kg intravenously usually causes anaesthesia. Consent should always be sought for procedures performed under anaesthesia and for anaesthesia itself.

The versatility in the route of administration is the main advantage of ketamine, but if intravenous access can be obtained, ketamine does not compare well with other intravenous anaesthetic drugs for use in normal children. Ketamine has a slow recovery profile and causes nausea and, because it can cause hallucinations, it would not be my first choice drug for a child who is already distressed and confused.¹¹ There are, of course, special indications for ketamine anaesthesia such as for trauma, burns and cardiac cases, and in the intensive care unit, but away from these scenarios ketamine should only be necessary in non-ideal and difficult circumstances.

When modern anaesthesia services are available anaesthetists should be responsible for anaesthesia.

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- 1 Harari MD, Netzer D. Genital examination under ketamine sedation in cases of suspected sexual abuse. *Arch Dis Child* 1994; 70: 197-9.

- 2 Green SM, Nakamura R, Johnson NE. Ketamine sedation for pediatric procedures: part 1. A prospective series. *Ann Emerg Med* 1990; 19: 1024-32.
- 3 Smith JA, Santer LJ. Respiratory arrest following intramuscular ketamine injection in a 4-year-old child. *Ann Emerg Med* 1993; 22: 613-5.
- 4 Taylor PA, Towey RM. Depression of laryngeal reflexes during ketamine anaesthesia. *BMJ* 1971; ii: 688-9.
- 5 Royal College of Anaesthetists and Royal College of Radiologists. *Sedation and anaesthesia in radiology*. Report of a Joint Working Party. London: Royal College of Anaesthetists and Royal College of Radiologists, 1992.
- 6 Bell GD, McCloy RF, Charlton JE, *et al*. Recommendations for standards of sedation and patient monitoring during gastrointestinal endoscopy. *Gut* 1991; 32: 823-7.
- 7 The Wylie report. Report of the working party on training in dental anaesthesia. *Br Dent J* 1981; 151: 385-8.
- 8 American Academy of Pediatrics. Committee on drugs. Guidelines for monitoring and management of pediatric patients during and after sedation for diagnostic and therapeutic procedures. *Pediatrics* 1992; 89: 1110-5.
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- 11 Donahue PJ, Dineen PS. Emergence delirium following oral ketamine. *Anesthesiology* 1992; 77: 604-5.

Dr Harari comments:

The correspondence about our article pertains to the choice of sedative agent rather than the principle of sedation. Our main aim was to initiate an awareness of the occasional need for sedation in genital examination, not to champion the virtues of ketamine. The choice of sedating agent and who should administer it are indeed controversial issues.

We chose ketamine in our three children because we are familiar with the drug. We have an ongoing, as yet unpublished study on ketamine administration in 150 children to date (age range 2-200 months, mean 60, SD 52), the main indication being muscle biopsy. We have not yet seen any major complications. Drs Rogers and Murdoch state that emergence phenomena are not rare. In our study of 150 children, we asked parents to rate their child's irritability on awakening. Ninety per cent rated their child as not being irritable, 9% had mild irritability, and 1% moderate. Doctors treating the children rated the child's irritability as either insignificant (93%) or significant such that a benzodiazepine was required (7%). It is likely that the younger the child, the less likely he is to have a distressing hypnompic event. Nevertheless we have altered our protocol to give midazolam 0.1 mg/kg on induction and again at the end of the procedure. In addition we now give a smaller induction dose of ketamine of 0.5 mg/kg intravenously.

Undoubtedly attention should be paid to the child misinterpreting the examination itself as sexual abuse. In our ongoing unpublished study we routinely asked all children aged >5 years if they had any recollection of the procedure for which the ketamine was given. None had any recollection (n=54). The amnesic properties of ketamine make it unlikely that the child would recall, let alone misinterpret the genital examination. This cannot be said of the unsedated child.

One cannot cavil at Dr Sury's sensible plea for pulse oximetry and fasting before ketamine administration. A more difficult issue however is the need for an anaesthetist to administer the drug. Virtually all sedative agents have serious, even potentially life threatening complications.¹ It would be comforting to have an anaesthetist available