



AN UNUSUAL CASE

Etorphine poisoning

C F Brink, J Erasmus

A general practitioner recently required assistance in the treatment of a 30-year-old game farmer who was accidentally injected with etorphine (M99). The patient's wife immediately administered naloxone, which they kept available for such situations. When the practitioner saw the patient about a half an hour later, he was drowsy but apparently breathing adequately. The patient was rushed to hospital in a sedan car at the highest possible speed. He arrived at the hospital about 12 minutes later.

On admission the patient was comatose, cyanotic and making no respiratory effort at all. His pupils were miotic, but he had a palpable pulse. Ventilation with a face mask was immediately initiated and he was subsequently intubated and ventilated. He responded favourably. Naloxone 0.4 mg was administered intravenously and the patient started making some respiratory effort and slight arm movements; however this lasted for less than 5 minutes.

He was subsequently ventilated with a ventilator and regained full consciousness after 12 hours. He was extubated and remained stable for some 8 hours. He then complained of dyspnoea which was completely reversed by naloxone 0.4 mg administered intravenously. After about another 14 hours he became dyspnoeic again and developed apnoea. This was again successfully treated with naloxone 0.4 mg administered intravenously. After this incident his recovery was uneventful and he was discharged from hospital after another 24 hours. He has been well ever since.

Etorphine is a very potent semi-synthetic opiate with a potency said to be 1 000 times that of morphine. There is a variation in sensitivity to this drug among different species, with man being extremely sensitive. It has no registered use in humans but is used for the immobilisation of large mammals. As such it is registered for veterinary use only.¹

In recent years game farming has expanded all over southern Africa due to favourable economic factors and the

development of safe capture and translocation techniques. Potent drugs made this development possible. Some of these drugs are registered for human use as well (e.g. haloperidol) and medical practitioners might be familiar with their side-effects. Others, like etorphine, have no human application. This technology involves a darting gun able to deliver an immobilising agent over a distance of about 50 - 100 m. For this to be possible the immobilising agent should be extremely potent so that a small volume (which can be delivered accurately over an adequate distance by the darting gun) would be effective. Etorphine is tailor-made for this purpose. Doses of 0.5 - 10 mg are used in a constant volume of 2.5 ml in varying concentrations.¹ This practice is followed to maintain ballistics and enhance accuracy of the darter. As game capturing is a rough-and-tumble business, accidents can and will happen. It is obvious that a dose sufficient to immobilise an elephant will be lethal to man. It is therefore important that doctors in southern Africa are made aware of this potent drug as well as the appropriate treatment of patients with accidental poisoning.

Etorphine is a Schedule 7 drug and its use is strictly governed in terms of the Medicines Control Act (Act 101 of 65) and the Veterinary and Paraveterinary Professions Act (Act 19 of 1982). The drug is either used by veterinarians or sold on prescription to clients with established training and experience in the use of the drug. It should be standard practice that users of this agent be aware of the potency of the drug, and that special precautions be taken (working with gloves, loading just before use, and keeping the antidote (naloxone) available for self-protection).¹

A Medline search for information on the treatment of etorphine poisoning could only furnish anecdotal reports, with the most recent report dating back to 1977.² It is therefore necessary that the present case be scrutinised and appropriate prevention and treatment be proposed.

Lessons learned

This case clearly demonstrated that once artificial ventilation was established, the cardiovascular suppressive effects of the opiate were not life-threatening. The availability of first aid ventilatory equipment (pharyngeal airway and Ambu-like resuscitation bag) should therefore be a priority for professionals in the field of game capture. Accordingly it would be prudent that all personnel should be specifically trained in first aid procedures, as accidents can happen in very

Dr C F Brink qualified MB ChB at the University of Pretoria and MMed (General Surgery) at the University of the Free State. He practises as a general surgeon in Kroonstad and is part-time head of surgery at Boitumelo Hospital, where he is deeply involved in the training of interns and community service doctors. He has a keen interest in nature and is addicted to the veld.

J Erasmus is a registered nurse trained in intensive care. She is the professional nurse in charge of the ICU at Kroon Hospital.



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remote places. Like diving, use of immobilising drugs should never be a solitary activity as trained support must be available immediately in case of an accident. It is also important not to rely on antidotes exclusively and not to transport a patient in the absence of ventilatory equipment, as this could be fatal. This case also demonstrated clearly that the antidote (naloxone) has a much shorter duration of action than the opiate (etorphine) and that repeated dosages of naloxone were necessary to arrest the suppressive effects of etorphine. It would therefore make sense to use naloxone parenterally, as well as an oral dose of long-acting antagonist (naltrexone) immediately after poisoning, but no studies in this regard are available.¹ A dose of 25 mg seems appropriate.

The patient demonstrated the re-narcotisation of opioids

caused by the mobilisation of tissue-bound opioids and the absorption of active metabolites from the gastrointestinal tract as opiate metabolites are secreted in bile. This phenomenon makes admission of all patients suffering from etorphine poisoning to hospital and a high-care facility equipped for ventilatory support mandatory. These patients should be kept under observation for at least 48 hours to ensure optimal management of re-narcotisation if need be. It would be helpful if all cases of etorphine poisoning could be reported so that treatment could be evaluated and upgraded.

1. Swan GE. Capture drugs. In: McKenzie AA, ed. *The Capture and Care Manual: Capture, Care, Accommodation and Transportation of Wild African Animals*. Pretoria: Wildlife Decision Support Services and South African Veterinary Foundation, 1993.
2. Goodrich PG. Accidental self-injection. *Veterinary Record* 1977; **100**: 458-459.