Options in perioperative analgesia: buprenorphine v. methadone

PAIN and analgesia is a fast developing field of research. However, new knowledge translates slowly into changes in clinical practice. Dogs and cats often undergo painful surgical procedures and adequate pain relief is of paramount importance in those situations.

Nowadays, the concepts of multimodal and pre-emptive analgesia are well known and applied by the veterinary profession. The administration of analgesic drugs with different mechanisms of action (NSAIDs) are the cornerstone of many analgesic plans in general veterinary practice. Other drugs such as tramadol, gabapentin, paracetamol and local anaesthetics are less commonly used.

The majority of opioid analgesic drugs used in clinical practice exert their analgesic effect through binding and activation of μ opioid receptors. Among these drugs, buprenorphine and methadone are currently licensed for the provision of perioperative pain relief in cats and dogs.

Partial agonist
Buprenorphine is a semi-synthetic partial μ opioid agonist widely used in veterinary practice. As a partial agonist, it binds to the μ receptor producing sub-maximal activation with a so-called “ceiling effect”. This means that increasing doses may, at some point, not increase analgesia.

It is also for this reason that the potential risk of unwanted side effects (bradycardia, respiratory depression, etc.) is reduced. It has a slow onset of action (30-40 minutes) and a reasonably long duration of challenging chronic pain conditions in human medicine and is even more difficult to recognise and treat in veterinary patients. The authors review knowledge on the assessment and treatment of these disorders in dogs and examine the potential options for future treatment. They conclude that a multimodal strategy involving a combination of agents such as non-steroidal anti-inflammatories, anticonvulsants such as gabapentin, opioids including tramadol and methadone, and tricyclic antidepressants such as amitriptyline may help improve quality of life in affected animals.

Authoritative choice
All these qualities make buprenorphine a very attractive choice for the veterinary practitioner and this is the reason why currently it is probably the number one opioid used in general practice.

In recent years, however, other opioid analgesics have been tested in clinical research settings and finally have made it into the veterinary market. One of these opioids is methadone.

Methadone is an “old” drug that has suffered for years from a bad reputation, because it is automatically linked to drug abuse and drug addicts. However, it is an excellent analgesic with a fantastic pharmacological profile.

Unlike buprenorphine, methadone is a pure μ opioid agonist, meaning that its efficacy augments as we increase the dose without a ceiling effect (6-12 hours) at the manufacturer’s recommended dose. Buprenorphine is often combined with sedatives such as alpha 2 agonists and acepromazine as a premedication previous to surgical procedures. It is also frequently used in the post-operative period to provide pain relief, often in combination with NSAIDs.

It is particularly efficacious in feline patients where research has shown it is as effective as morphine. Besides, it is very convenient due to its longer duration of action and it can be administered by several different routes (intravenous, intramuscular, subcutaneous and transmucosal) with excellent bioavailability and results.

Finally, it is also advantageous that buprenorphine is a Schedule 3 opioid with a lower level of legal restrictions and controls and a lower potential for human abuse.
Small animal anaesthesia techniques outlined

**SMALL Animal Anaesthesia Techniques** is the title of a recently published book written by veterinary surgeon Carolyn McKune, a veterinary anaesthesiologist of Mythos Veterinary in Gainesville, Florida, and Amanda Shelby, a certified veterinary technician and clinical specialist in anaesthesia at the Louisiana State University School of Veterinary Medicine. Additional contributions are provided by Nicole Fitzgerald, a veterinary technician from the Veterinary Teaching Hospital and Clinics at the same university. The book’s purpose, as outlined by the authors, “is to provide an easily accessible guide to the veterinary professional for development of a balanced anaesthesia protocol with appropriate analgesia”.

It is intended as a quick reference to protocols for anesthetising canine, feline and exotic patients, providing comprehensive information on procedures from the basics of pharmacology, physiology and protocols for anesthetising canine, feline and exotic patients, providing comprehensive information on procedures from the basics of pharmacology, physiology and equipment to handling challenging procedures and the compromised patient.

Included are tips on how to anticipate and avoid complications, with example protocols for specific patients. Chapters cover (in order): process, equipment and monitoring, drugs and fluids, protocols for specific procedures, anaesthesia in patients with concurrent disease, complications, anaesthesia and analgesia in the exotic patient, and local analgesic techniques (regional blocks) – with plenty of colour illustrations, diagrams and well-laid out tables. There are extensive lists of references at the end of each chapter. Appendices cover (among other things) an acute pain scale (developed at Colorado State University); creating dilutions and reconstituting solutions; CPR; CRI calculations; fluid drip rates; epidural calculations; abdominal tap. A companion website, www.wiley.com/go/shelbyanesthesia, includes videos, images and worksheets for calculations.


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