

BUPIVACAINE-MARCAINE USE

BUPIVACAINE (MARCAINE) RECOMMENDATIONS FOR USE IN PERIOPERATIVE ANALGESIA

Bupivacaine is a local anesthetic which blocks the generation and conduction of nerve impulses. It is commonly used for analgesia by infiltration of surgical incisions. Preemptive use of analgesics (including local anesthetics used to control post-operative pain) i.e. before tissue injury, is recommended to block central sensitization, thus preventing pain or making pain easier to control.

Bupivacaine has a longer duration of action than lidocaine, to which it is chemically related - approx. 6-8 hours as opposed to 1-2 hours for lidocaine. Duration of action is affected by the concentration of bupivacaine used and the volume injected. Concentration affects the time for local anesthesia to occur and the density of the block. Volume determines the area that is infiltrated and therefore anesthetized.

Total dose in mg/kg is important in local anesthetic toxicity. Signs of toxicity include central nervous system signs (seizures), and cardiac dysrhythmias progressing to asystole. Bupivacaine toxicity is dose dependent; there is variation between species and age of animals. Rats appear to be more tolerant than larger species (e.g. dogs, sheep, humans), while rabbits are thought to be more sensitive.

Bupivacaine is a prescription drug, but it is not a controlled substance. It is available in concentrations of 0.25%, 0.5% and 0.75%, either plain or combined with epinephrine (1:200,000). Epinephrine reduces cutaneous blood flow and therefore prolongs the local anesthetic effects. Maximum concentration of bupivacaine recommended for subcutaneous use is 0.25%. Higher concentrations are used mostly for caudal and epidural blocks in human medicine.

Bupivacaine injectable (0.25%), with or without epinephrine, in single dose vials of 10mls and 30mls, or multi-dose vials of 50mls, is available from most veterinary supply houses. Approximate cost is less than 50c/ml.

Vendors: [Penn Veterinary Supply, Inc.](#) - 800.233.0210

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Dose rates from several sources recommend an upper limit of 2-3mg/kg for dogs and rats, 2mg/kg for rabbits. However, if using undiluted bupivacaine 0.25% (2.5mg/ml) it may not be possible to inject a large enough volume to have adequate local anesthetic effects without approaching toxic levels, especially in rodents and rabbits.

Therefore, ULAR recommends the following:

Use a 0.125% solution (you can buy 0.25% Marcaine and dilute it 50/50 with saline) and a maximum dose of 2 mg/kg body weight.

Before making the surgical incision, inject very small volumes (use a 25 gauge needle) at equidistant places approximately 0.5-1.0 cm apart, in an ellipse around the incision site. Wait 3-5 minutes before starting the incision. Continued analgesia can be maintained by repeating injections of bupivacaine (as described above) around the incision at 6-8 hourly intervals.

For rodent surgical procedures such as ovariectomies or stereotaxic cranial surgery, a single injection of Bupivacaine prior to making the first surgical incision may be sufficient analgesia. As always, each animal should be monitored for evidence of post-operative pain and additional pain relief provided when needed.

References

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"Preemptive analgesia: Managing pain before it begins"

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COMPAMED archives

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