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GUIDELINES ON ANESTHESIA - PART 3: RABBIT

ANIMAL AND PLANT CARE FACILITY, HKUST

GUIDELINES ON ANESTHESIA - PART 3: RABBIT

This guideline is provided for users planning rabbit procedures at the Animal & Plant Care Facility, The Hong Kong University of Science & Technology (APCF-HKUST). Any exception to this guideline must be described and justified in the user protocol, and must be approved during the regular review process prior to starting any procedure.

I. RECORDKEEPING FOR INJECTABLE ANESTHETICS

Following the Hong Kong Regulations on Pharmaceuticals, the dispensing and use of drugs classified as Schedule 3 (Dangerous Drugs or DD) must be properly recorded in the Dangerous Drugs Register (DDR). APCF will issue whole bottle(s) of the drug(s) requested along with the DDR book to record the dispensing and use of the DDs by the PI or their authorized representative.

Along with the required DDR, data recording until full recovery of the animal(s) that has undergone any procedure(s) is also essential. Below are the information that needs to be monitored and documented.

Please see attached monitoring chart, section XI.

II. PRE-OPERATIVE CARE

1. Perform a thorough physical examination and obtain accurate weight.
2. Careful handling and restrain is necessary; put in a box with a towel and make them relax in the new environment for 30 minutes to 1 hour.
3. Give SC in the box and let them rest for 10-15 minutes. For SC injections, give injection at scruff or flank
4. For IM injections, put them outside and restrain using a “burrito technique”, give the injections at the 1) Perilumbar - Locate the last (floating) rib and count three to five vertebrae caudally (toward the rump); then measure two fingers width (about one to two inches) laterally on either side of spine or 2) Hind limb – when injecting the hind limb muscle masses, you need to be careful to avoid hitting the sciatic nerve

III. SUPPORTIVE CARE OF ANIMALS DURING ANESTHESIA

1. For any procedures requiring anesthesia longer than 5 minutes, apply an ophthalmic ointment to both eyes to prevent desiccation.
2. Maintain normal body temperature by using thermal pads or heat lamps during anesthesia. Care must be taken when using an over-the-counter electric heating pads and lamps as these can be prone to overheating.
3. If procedure is more than 30 minutes, subcutaneous fluid (warm) is administered 10 ml/kg/hour e.g. 4 kg rabbit (40 ml) anesthesia to maintain adequate hydration as described in the approved protocol.

IV. MONITORING AND ASSESSMENT OF ANESTHESIA

1. Monitor respiratory rate and effort, and the color of mucous membranes at regular intervals (approximately 15 minutes each).
2. Assess level of anesthesia by pedal reflex or whole body parts movement. Adjust anesthetic delivery to maintain surgical plane by giving half dosage only of the anesthetic agent whenever necessary.

V. BLOOD COLLECTION

1. Restrain the animal using a “burrito” technique.
2. Shave the area of injection and apply the local anesthetic cream at least 15 minutes before the procedure.
3. Disinfect the area with alcohol/ diluted chlorhexidine.
4. Use catheter/butterfly or syringe with 25 g needle when collecting blood.
5. Apply compression at the venepuncture site afterward. For 1) *lateral ear vein*, apply pressure with cotton for approximately 2-5 minutes and for 2) *central ear artery* blood collection, apply pressure with cotton (clips/clothespin) for approximately 10-15 minutes to achieve haemostasis.
6. Clean injection area before returning to the cage.
7. For sedated animals, check after 30 minutes and 1 hour after the procedure.

VI. RAISING ANTIBODIES/ SUBCUTANEOUS INJECTION

1. Restrain the animal using a “burrito” technique.
2. Give sedation (SC or IM – please refer to section II
3. Shave the area of injection and apply the local anesthetic cream at least 15 minutes before the procedure.
4. Disinfect the area with alcohol/ diluted chlorhexidine.
5. Use 25 G needle for injection.
6. Clean injection area before returning to the cage.
7. Give anti-sedan if necessary.
8. Check animal 30 minutes and 1 hour after the procedure.
9. Check the injection area at least once a day.

VII. EYE PROCEDURES

1. After general anesthesia (section II), lay the animal on the table with pad or towel.
2. Cover the body with towel when doing the procedure to prevent heat loss from the body.
3. A general anesthesia form needs to be filled up.
4. Subcutaneous fluid (warm) is administered 10 ml/kg/hour e.g. 4 kg rabbit (40 ml).
5. Give anti-sedan if necessary.
6. After the procedure, put the animal in the box and wait for recovery before putting in the cage.
7. Check the animals 1 hour after they were put in the cage and at the end of the day.

VIII. WHOLE BLOOD COLLECTION FROM CAROTID ARTERY

1. Restrain the animal using a “burrito” technique.
2. Give general anesthesia to the animal (section II).
3. Put the animal in the surgical table in ventro-dorsal position.
4. Shave the neck area.
5. Make a 5cm opening on the middle line of the neck.
6. Search the carotid artery with tissue forceps and a homeostatic forceps
7. Isolate the carotid artery from the vagus nerve and other connective tissue.
8. Tie up the distal end of the carotid artery by silk suture.
9. Clip the proximal end of the carotid artery with a bulldog clamp.
10. Insert a 16G intravenous catheter into the artery.
11. Fix the position of the catheter tip by two silk suture knots.
12. Release the bulldog clamp and collect blood from the artery through the catheter into the centrifuge tube.
13. Suture the muscles after blood collection.
14. Dispose the carcass in a double plastic bag and put at the freezer (7205).

IX. POST OPERATIVE CARE

1. Place the rabbit in a box with a pad or a towel.
2. The animal must be continuously monitored until it can maintain an upright posture before leaving or transferring back to its original cage.
3. Check the animals 1 hour after they were put in the cage and at the end of the day.

X. ANESTHETIC AGENTS AND OTHER SURGICAL DRUGS

The table below contains information on the injectable anesthetic agents available in APCF. Please note that this does not include other agents that may be listed in a user's approved protocol.

Agent	Dosage	Duration of Anesthesia/NOTES
Local Anesthetic		
Lidocaine/Prilocaine (Encain®) Cream	4 mg/kg (0.4 mL/kg of a 1% solution) Topical	10-15 minutes Local infiltration/ Ear Blood collection
Injectable Anesthetic		
Ketamine-Medetomidine (cocktail)	K: 5 mg/kg + M: 0.05-0.1 mg/kg SC	10-15 minutes <i>Blood Collection</i>
	K: 5-7mg/kg) + M (0.07-0.1 mg/kg) SC	15-20 minutes <i>Intradermal injections</i>
	K: 10-15 mg/kg + M: 0.1-0.2 mg/kg SC	40-50 minutes <i>Eye Procedures</i>
Ketamine-Xylazine (cocktail)	K (10-20 mg/kg) + X (1-5 mg/kg) SC or IM	30-40 minutes <i>For Whole Blood Collection/Eye Procedures</i>
Opioid Analgesia		
Buprenorphine	0.03 mg/kg IM	Used pre-operatively for preemptive analgesia and postoperatively every 12 hours
Butorphanol	0.1-0.5 mg/kg SC	Pre-operatively analgesia
Reversal Agents (Note: Reversal of alpha-2 agonist results in removal of analgesic properties so additional analgesia must be given prior to reversal if painful procedure has been performed)		
Atipamezole	0.1 – 0.2 mg/kg SC	For reversal of Medetomidine
Yohimbine	0.2 – 1.0 mg/kg SC, IM	For reversal of xylazine effects
Non-steroidal anti-inflammatory analgesia (NSAID) Note that prolonged uses may cause renal, gastrointestinal, or other problems. Avoid using for longer than 2 to 3 days.		
Carprofen	2-4mg/kg SC or PO SID x 3 days	Used pre-operative and postoperative analgesia; may be used together with buprenorphine
Meloxicam	5 mg/kg SC or PO	Used pre-operative and postoperative analgesia;
Ketoprofen	5 mg/kg SC SID x 3 days	Used pre-operative and postoperative analgesia;
Euthanasia		
Pentobarbital	≥ 100 mg/kg IV	5-10 minutes

Note:

Muscle relaxants that cause paralysis of skeletal muscle such as Suxamethonium chloride/ Succinylcholine should not be used in place of anesthetic as they provide no anesthesia (loss of consciousness) and no analgesia (loss of pain sensation).

If muscle relaxants are to be used with anesthesia and analgesia special ethics permission is required which details how the PI will monitor and ensure animals are fully unconscious while paralysed by the muscle relaxants.

XI. ANESTHETIC MONITORING CHART FOR RABBIT

Date	PI and USER	Animal Protocol#	Tag#/ID	Species	Weight	Sex	Age
Procedure:							
Anaesthetic Agent(s): Dose (mg)							
Time of Induction:				Time of Recovery:			

Time	Heart Rate (BPM)	Respiratory Rate (RPM)	Temperature (C)	Signature

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