बिहार पशु विज्ञान विश्वविद्यालय

BIHAR ANIMAL SCIENCES UNIVERSITY

मद्धेर्गावो भवन्तु नः

VETERINARY COLLEGE BIHAR

Wild Animal Surgery

Dr. Ramesh Tiwary
Assistant Professor
Deptt. of Vet. Surgery and Radiology

Basics of Wild Animals Handling

- Domestic/Captive/Wild
- Basics knowledge about animals
- Clear idea about purpose of restraining
- Methods of Restraining
- Handling of Instruments
- Species wise knowledge of drugs for chemical restraining and their Reversal
- Knowledge about handling of anaesthesia induced emergency

Domestic/Captive/Wild

Courtesy of Dr. K.K. Sharma

Captive/Wild

- Easy to Handle Domestic animals- familiar to human being
- In Captive- animal remained in confined space
- In Wild - limitations are wide area, before restraining you need to survey the area, some animals may inters into nearby pond/river and there may be chances of drowning

Courtesy of Dr. K.K. Sharma

The person capturing or administering drugs to a wild animal simultaneously assumes the responsibility for the life of that animal

Richard K. Clark

Choice of immobilizing drugs

Species	Adult body weight (Kg)	First choice	Second choice	Third choice
Asian elephant	4000-5000	Medetomidine3-5mg/ton + Ketamine-125mg/ton	Xylazine-100mg/ton + Ketamine-125mg/ton	Etorphine-1mg/400-500kg
Rhino	2000-2200	Etorphine @1mg/400-500kg	Carfentanyl	
Wild buffalo (Bison)	700-1000	Etorphine @1mg/400-500kg	Medetomidine 3-5mg/ton + Ketamine-125mg/ton	Xylazine-500mg/ton + Ketamine-125mg/ton

Drug Dosage

Recommended drug/ dosages for immobilization of adult tiger

Sr. No.	Drug(s) for immobilization	Male	Female	Rreversal drugs (antidote)
1.	**Hellabrunn mixture (HBM)** [Xylazine (XYL) and Ketamine (KET)] mixture in a ratio of 1.25:1	**3.0 ml** (375 mg XYL & 300mg KET) **to3.5 ml** (437.5 mg XYL & 350 mg KET)	**2.5 ml** (312.5 mg XYL & 250 mg KET) **to 3.0 ml** (375 mg XYL & 300mg KET)	Yohimbine hydrochloride (0.125 $mgkg^{-1}$ body weight)
2	**Medetomidine (MED) and Ketamine (KET)**	50-60 µg kg^{-1} body weight MED and 1-2 $mgkg^{-1}$ body weight KET		25-35 mg of Atipamezole hydrochloride

Medetomidine (25 µg/kg) and ketamine (4 mg/kg) intramuscularly

Leopard: 5 mg K and 1.5 mg X per kg

Species wise knowledge of drugs for chemical restraining and their Reversal

Drugs	Reversal
Xylazine	Yohimbin
Medetomidine	Atipamezole
Etorphin	Diprenorphine
Butorphanol	
Acepromazine	
Azaperone	
Telazole	
Ketamine	

Alpha-2 agonists

- Xylazine(1962)
- Medetomidine/Dexmedetomidine
- Detomidine
- Presynaptic action at noradrenergic receptors; decreased NA release -> decreased sympathetic activity
- Sedative and analgesic muscle relaxation effects

Alpha-2 agonists

- **Advantages**
- –Profound sedation
- –Good analgesia
- Muscle relaxant
- –Reversible; (atipamezole) IM (emergency IV)

- **Disadvantages**

–Emetic

–Peripheral vasoconstriction

–Hypoxia, hypercapnia

–Can become aroused/defensive if stimulated

Dissociatives

- Very commonly used
- –Ketamine
- –Tiletamine(4 x more potent)
- •Dissociative effects
- –Cataleptic state, eyes remain open, intact corneal reflexes
- –Muscle tremors, tonic-clonicmovements,
- •Hallucinations
- •Typical apneustic breathing pattern
- –long inspiration, short expiration
- •Usually given in combination with other drugs

Dissociatives

Advantages

- –Minimal respiratory depression, cardiac output maintained
- –Laryngeal reflex maintained
- –Can be given IM or IV (and epidurally)
- –Marked analgesia

Disadvantages

–Muscle rigidity/ tremor/movement

–Eyes open – desiccation/trauma

–Increased intracranial pressure

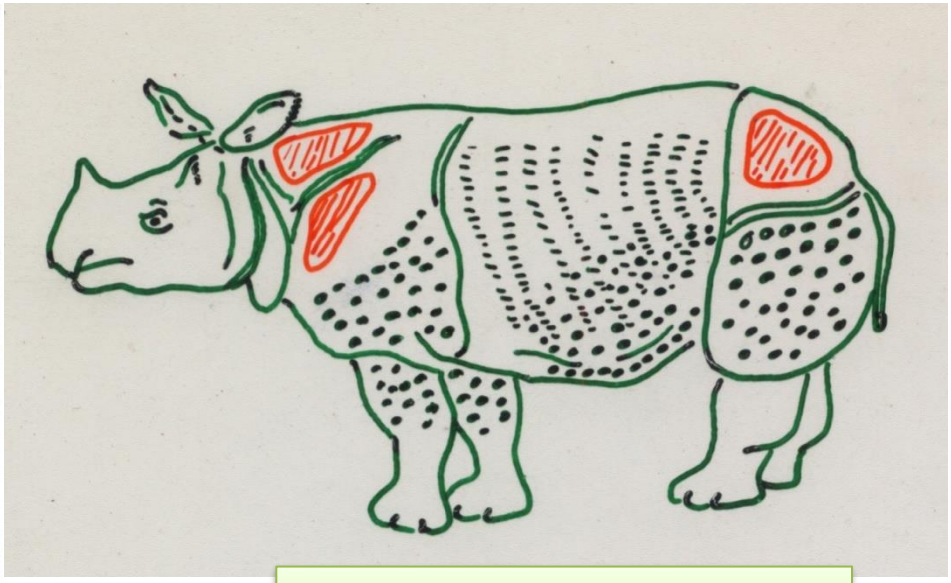
–No antagonist

–Poor quality recovery

–Tiletamine alone can cause seizures

–Hyper-salivation

Darting(Restrain)/Shooting (Hunt)



Courtesy of Dr. K.K. Sharma

Inadequate depth

- Warning signs!
- –Strong palpebral reflex
- –Eye position
- –Increased heart rate
- –Increased respiratory rate
- –Muscle movements/tremors
- •Sudden arousal

Emergencies

- **Cardiac**
- **Respiratory**
- **Shock & hypotension**

"For every mistake that is made for not knowing, a hundred are made for not looking."

Respiratory Emergency

- •‘Respiratory failure’
- •Laboured or reduced breathing
- –e.g. excessive depth, cerebral hypoxia, pulmonary oedema
- •Tachypnoeaor panting
- –e.g. inadequate depth, hypoxaemia, hypercapnia, hyperthermia
- •Irregular patterns
- –e.g. Apneustic breathing seen in ketamine.

Management

- *Do not give any more anaesthetics*
- •**Airway**
- –Check & clear if obstructed
- –Consider endotracheal tube
- •**Breathing**
- –Establish & maintain
- –IPPV at 1 breath per 5 seconds (large felid)
- –(Chest compressions not very effective)
- •**Circulation –check heart & pulse**
- •**Drugs**
- –Reversal agents (careful!)
- –Doxapram< 1mg/kg IV (or tongue muscle if impossible)
- •Monitor very closely for recurrence

Cardiac Emergency

- *Do not give any more anaesthetics*
- •**Airway**
- –Check & clear if obstructed
- –Consider endotracheal tube
- •**Breathing**
- –Establish & maintain
- –IPPV at 1 breath per 5 seconds (large felid)
- –(Chest compressions not very effective)
- •**Circulation –external cardiac massage / head down**
- •**Drugs**
- –Adrenaline 10µg/kg IV or IC
- –(Repeat every 3-4 minutes if necessary)
- –If heart restarts give atropine by slow IV

Hyperthermia

- Core body temperature above normal limit
- •Leading to brain damage & death
- •If slight or short-duration –recovery slow
- •Causes
- –Anaesthetics interfere with thermoregulation
- –High environmental temperatures
- –Pre-anaesthetic excitement
- –Seizures

Management

- Move animal into shade
- Cool body with water or alcohol
- Packing with cold water bags
- Fanning
- Control seizures (diazepam)
- Cold water enema via stomach tube into rectum, drained & repeated every 5 minutes
- Never enclose in a box

Shock & hypotension

- Inadequate perfusion of tissues with blood
- –MAP <55 mmHg life threatening
- •Causes
- –Especially hypovolaemia from loss of blood or plasma
- –Haemorrhage and dehydration most common
- •Signs
- –Weak & rapid pulse
- –Pale or blue mucous membranes
- –Prolonged CRT
- –Rapid heart beat
- –Hyperventilation or shallow/sporadic breathing
- –Cold extremities

Management

- *Do not give any more anaesthetics*
- •Correct any obvious cause
- •Reverse anaesthetics if possible (careful!)
- •Rapid intravenous fluids
- –Isotonic crystalloids (LRS) (10ml/kg bolus)
- –Colloids (hetastarch) (10ml/kg slow bolus)
- –(Subcutaneous fluids not as effective)
- •Antibiotics
- •Dexamethasone 1mg/kg IV
- •Oxygen if possible

Precautions

- **Prevention is better than cure…**
- •Monitor vital signs
- –Heart rate
- –Pulse rate and strength
- –Quality & rate of breathing
- –Colour of mucous membranes & CRT
- –Body temperature
- **Ensure access to veins**
- –Use clippers (and spirit)
- –Lateral tail vein
- –Medial or lateral saphenous vein
- –Jugular vein
- –Femoral veins
- –Sublingual veins

Precaution/Risk

How Not to Releasea A Leopard.wmv

Gun Shot Wound in Elephant

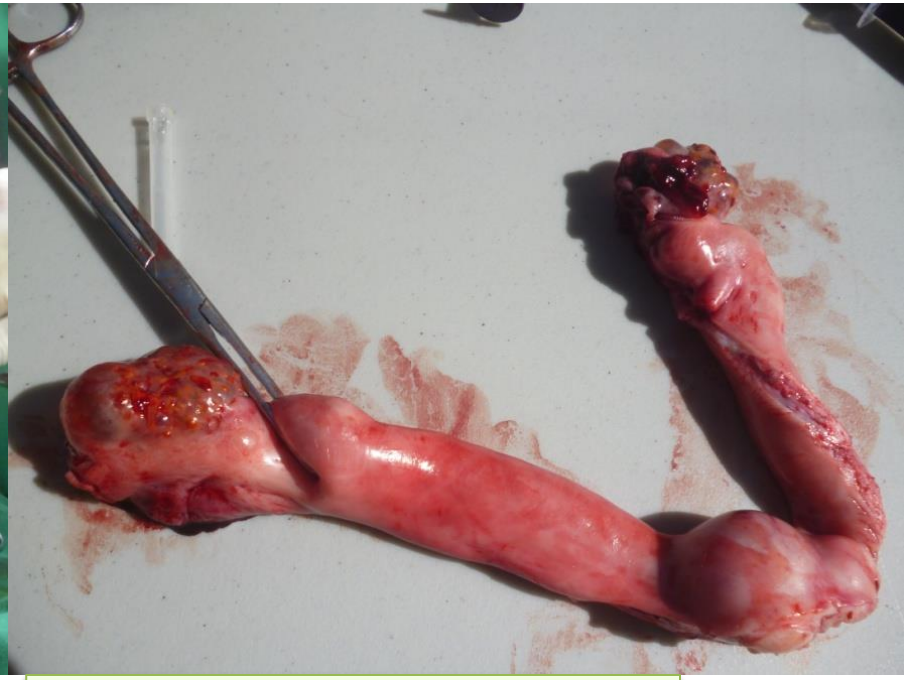
Tusk injury/ Broken tusk

- In broken tusk, pulp cavity should be irrigated with betadine
- Eliminate Infection
- Seal the cavity using Methyl methacrylate.

Courtesy of Dr. Bhupen Sharma

Treatment of wound on tail

Pyometra in Tigress



Courtesy of Dr. Bhupen Sharma

Intramedullary Pinning in Kite

Thank You