

Fasting and pre-anaesthetic examination: Water and food were withheld 30min prior to drug administration to reduce chances of vomiting. A physical examination was carried out in all birds to assess the state of general health. This examination included recording body weights, body temperatures, respiration rates, heart rates, reflexes and checking for any injuries. Mean body weight of budgerigars was 30g.

Drug administration: For this study detomidine was used as 1% Inj. Domosedan by Farnos and ketamine was used as 5% Inj. Calypsol by Medimpex. Study was conducted in the operation theater of the surgery section, Department of Clinical Medicine and Surgery, University of Veterinary and Animal Sciences, Lahore, Pakistan.

To determine the detomidine dosage to be used in combination with ketamine at the dosage 40mg/kg b.w. (Heaton & Brauth 1992) three trial dosages of detomidine i.e. 1.2mg/kg b.w., 1.3mg/kg b.w. and 1.4mg/kg b.w. were selected within recommended dosage range for detomidine cocktails (Virtanen, 1986). Out of these dosages only one trial dosage, i.e., 1.4mg/kg b.w. induced anaesthesia as cocktail with 40mg /kg b.w. ketamine and was selected for this study.

Birds were administered detomidine-ketamine cocktail at the dosages 1.4mg/kg b.w. and 40mg/kg b.w. respectively in pectoral muscle (Valvered *et al.* 1993) using insulin syringe (1ml).

Parameters of study: The induction period, duration of anaesthesia, recovery period, degree and duration of analgesia, body reflexes (righting reflex, toe pinch reflex, feather plucking reflex, palpebral reflex, table knock reflex, pharyngeal reflex), body temperature, respiration rate and heart rate were taken as parameters of study.

In all birds respiration rate was recorded from sternal movements, heart rate was recorded with stethoscope keeping diaphragm on left costal side and temperature was recorded from axilla.

Results and Discussion: Detomidine-ketamine induced a rapid and smooth anaesthesia in all birds and mean induction period was 1.6 ± 0.64 min. Anaesthesia was smooth but light in nature. All birds showed dorsal recumbency during anaesthesia. Except three birds, eyes of all birds closed. Mean duration of anaesthesia was 70.2 ± 30.88 minutes. Analgesia was very superficial and mean duration of analgesia was 27.5 ± 4.95 minutes. Except toe pinch reflex all reflexes i.e. righting reflex, feather plucking reflex, table knock reflex, palpebral reflex and pharyngeal reflex were absent during anaesthesia. Birds showed severe hypothermia and body temperature dropped to $98.6 \pm 3.43^{\circ}\text{F}$ during anaesthesia and it increased to $103 \pm 0.10^{\circ}\text{F}$ at the time of complete recovery. Respiration rate per minute decreased to 53 ± 25.48 during anaesthesia and increased to 100 ± 3.05 at the time of complete recovery. Heart rate per minute decreased to 150 ± 13.22 during anaesthesia and increased to 189 ± 21.36 at the time of complete recovery. Recovery from anaesthesia was extremely prolonged and rough due to the signs of neck and legs paralysis, fluttering and inability to lift up the head and body. Throughout the recovery period thermoregulatory measures were strictly followed to avoid aggravation of hypothermia and respiratory depression. Mean recovery period was 1132 ± 118.95 min. During this study detomidine-ketamine cocktail did not cause any mortality at the dosage used and all budgerigars completely recovered after 48 hours.

CONCLUSION

From the results of this study it is concluded that because of prolonged and rough recovery period accompanied by severe hypothermia and respiratory depression, detomidine-ketamine cocktail is not a safe and desirable anaesthetic for budgerigars at the dose used.

REFERENCES

- Booth, N.H. and L.E. McDonald (1988). *Veterinary Pharmacology and Therapeutics*, Sixth Edition. Iowa State University Press, U.S.A., 253-264pp.
- Freed, D. and B. Baker (1989). Antagonism of xylazine hydrochloride sedation in raptors by yohimbine hydrochloride. *Journal of Wildlife Disease* 25(1): 136-138.
- Heaton J.T. and S.E. Brauth (1992). Effects of yohimbine as a reversing agent for ketamine-xylazine anesthesia in budgerigars, Laboratory. *Animal Sciences* 42(1): 54-56.
- Lees, P. (1991). Drugs acting on the central nervous system, pp.315-391. In: Brander, G.C., D.M. Pugh, R.L. Bywater and W.L. Jenkins (Eds). *Veterinary Applied Pharmacology & Therapeutics*, 5th edition. Bailliere Tindall, U.K.
- Mohammad, F.K., M.S. Al-Badrany and A.M. Al-Hasan (1993). Detomidine-ketamine anaesthesia in chicken. *Veterinary Record* 133: 192.
- Valvered, A., D. Bienzle, D.A. Smith and D.H. Dyson (1993). Intraosseous cannulation and drug administration for induction of anaesthesia in chicken. *Veterinary Surg.* 22(3): 240-244.
- Virtanen, R. (1986). Pharmacology of detomidine and other alpha-2-adrenoceptor agonists in the brain. *Acta Veterinaria Scandinavica* 82: 35-46.



VET BRIEF

ZOOS' PRINT JOURNAL 21(9): 2417-2418

TWO CASES OF REHABILITATION OF RECUMBENT ELEPHANTS

I. Nath¹, K.L. Purohit², S.K. Mishra³, S.K. Panda⁴, V.S.C. Bose⁵

¹ Associate Professor, Department of Surgery, ⁴ Assistant professor, Department of Pathology, ⁵ Professor, Department of Surgery, Orissa Veterinary College, Bhubaneswar, Orissa 751003, India, ² Range Officer, Nandan Kanan Zoo, Orissa, India ³ D.F.O, Chandaka Wildlife Division, Orissa

plus web supplement of 2 pages

Rehabilitation of recumbent large animals present a special problem for veterinarians. Once the animal becomes recumbent it develops bed sores due to unequal pressure on various areas. Fessler and Amstutz (1974) reported successful rehabilitation of a stallion having midshaft radial fracture which was immobilized with a combination of modified Thomas splint and plaster cast. They kept the stallion in a sling using a wider belly band. The present paper describes the rehabilitation methods adopted in two recumbent elephants.

Case 1: A cow elephant with swollen right hind leg at thigh region was located in the Chandaka wildlife division, Orissa. She had difficulty in walking as evidenced by drag impressions of hind legs in the path of her movement. As the animal was in dense forest it was decided to

^w see images 1-10 in the web supplement at www.zoosprint.org

© Zoo Outreach Organisation; www.zoosprint.org
Manuscript 1490; Received 02 January 2006; Finally accepted 25 June 2006;
Date of publication 25 August 2006

tranquilize her for examination and treatment. The animal was driven out from dense cover to the adjoining teak plantation which was comparatively open and had good visibility. Then the elephant was darted with 400mg of xylazine hydrochloride using 10ml aluminum syringe dart. After 10 minutes the elephant stood with ears swaying and drooping trunk. The animal was supported in that position by a sling made of crossed wooden planks and plastic ropes tied around the belly (Image 1^w). The swelling was examined and was found to have no external opening. The extension and flexion of the limb was normal indicating non-involvement of the joint. Exploratory puncture of the swelling with a 16 gauge 10cm long needle at the dependent part evidenced presence of dark fluid (Image 2^w). The swelling was incised to drain a litre of the fluid. The wound cavity was flushed with povidone-iodine lotion. Penidure-LA 24 lacs 5 vials and Novalgin 30ml 2 vials were injected intramuscularly. In this process the animal knelt down on the left fore leg and leaned on a pole. She was kept pulled with a rope end by six persons and Yohimbine hydrochloride 50mg was injected in the ear vein. The animal revived immediately dismantling the structure (Image 3^w).

A second sedation was done after 7 days to examine the wound by a metal detector which was negative for presence of any metallic foreign body and for repetition of previous treatment schedule. Blood samples were collected for haematological examination. A sterile swab was also collected for culture and sensitivity test. Ten litres of 5% DNS was administered intravenously. Elephant was revived with 50mg of Yohimbine hydrochloride. But while moving uphill she fell down (Image 4^w). Stimulation of elephant by splashing of water and loud noise could not make the animal to stand. The next day while attempting to lift the elephant using a pulley fixed to the wooden platform (Image 5^w) she succumbed and died. Post-mortem examination revealed accumulation of fluid inside some more pockets adjoining the first wound. The stifle joint was found to be normal. The values of haemoglobin, total leukocyte count, total erythrocyte count, PCV and ESR were 8.4g%, 10,300/cubic mm, 2.6millions/cubic mm, 27% and 67mm at 15 minutes & 70mm at 30 minutes respectively. All the above parameters were within normal range except ESR which was high indicating mild inflammatory process. No gross or histopathological lesions were found anywhere in the body. The lungs were filled with edematous fluid indicating hypostatic congestion. The death of the elephant may be attributed to hypostatic congestion due to recumbency in uneven space, and respiratory failure produced by improper positioning in the process of lifting with ropes only. The anterior part of the body was lower than the hind portion as the animal could not raise its head resulting in increased pressure on the diaphragm by the abdominal organs and respiratory failure. Due to chances of strangulation, the head and neck region could not be lifted using ropes. Further the proper adjustment for lifting the elephant was not possible due to lack of free area where the animal was in recumbency.

Case 2: A captive trained elephant was reported to be off feed by its handler near Hirakud town in the Sambalpur forest division, Orissa. History revealed that after a long walk the elephant was rested there for five days. It then developed inappetance with ulcerations in the mouth. Though it was taking some food it developed weakness and became recumbent. Bed sores developed at lateral abdominal wall, forehead region above eye and at temporo-mandibular region (Image 6^w). Exploration of the mouth cavity revealed mild degree of stomatitis which was treated with boroglycerine paint. No abnormality of teeth

was present. Intramuscular Amoxycillin Cloxacillin (Intamox, Intas pharmaceuticals Ltd, Ahmedabad) 3g 10 vials; Novalgin (Hoechst India Ltd, Mumbai) 30ml two vials; and Neurobion (Merck Lab) 3ml 10 ampoules improved food intake. But the bed sores were aggravated in spite of regular dressing with povidone-iodine lotion and the animal was unable to stand up even by stimulation. It was decided to make the animal to stand and keep it in a sling.

By using one rope sling surrounding the body just behind the forelimbs and another sling attached to a conveyor belt surrounding the belly in such a way that the cranial aspect of the body was more elevated than the hind portion, the elephant was lifted by a crane (Image 7^w). With the mahout's oral commands, the elephant was first brought to a sitting position (Image 8^w) and then lifted to standing position. The sling was fixed to a swing type of arrangement made with strong iron pipes and ropes (Image 9^w). The limbs were massaged from below upwards to improve circulation. The wounds were dressed with ciprofloxacin lotion along with parenteral ciprofloxacin 80mg 10 vials, Novalgin 30ml two vials, and Neurobion 3ml 10 ampoules for five days. After two days the animal started moving its limbs sluggishly. The elephant was given physiotherapy through massaging, passive movements of joints of the limbs twice a day for about half-an-hour. The treatment continued for a fortnight and the animal recovered with improved intake of food and started walking normally within a month (Image 10^w).

Discussion: In the first case the elephant might have developed abscess in the thick forest, injuries caused by pricks resulting in infection. At a later stage the infection was aggravated due to lack of immediate treatment. Because of the toughness of the skin and loose areolar subcutaneous tissue, suppurative material spread within the thigh muscles forming shirt-stud abscesses, thereby causing impairment in movement. Pain and limited movement was responsible for decreased food intake and weakness. The animal was tranquilized and the suppurative materials drained from the subcutaneous portions of the abscesses only as the deeper cavities could not be identified. Administration of antibiotics, pain killers and nerve tonics in the first instance improved the condition, but the recovery from anaesthesia was uneventful. In second attempt after 7 days it fell down due to uneven sloppy ground while recovering from anaesthesia. Attempts to rehabilitate the elephant by lifting and then keeping in a sling as suggested by Fessler and Amstutz (1974) were unsuccessful because of the failure to keep the anterior part of the body elevated compared to posterior part to prevent pressure on diaphragm and respiratory distress which resulted in its death.

In the second case using double slings simultaneously one behind the fore limbs and the other as a belly band as applied in the case of the stallion Fessler and Amstutz (1974) and verbal stimulation by the mahout helped in maintaining proper balance between thoracic and abdominal portions during the process of lifting by a crane. After lifting the animal to standing position, physiotherapy improved the circulation to limbs making the animal to support itself, and recovery.

REFERENCE

Fessler, J.F. and H.E Amstutz (1974). Fracture Repair. In: Oehme, F.W. and J.E. Prier (Eds.). *Text book of Large Animal Surgery*. 1st edition. The Williams and Wilkins Company, Baltimore, 311pp.

ACKNOWLEDGEMENT

Authors are thankful to S.C. Mohanty, P.C.C.F, Orissa for according permission to undertake the study. Thanks are also due to V.A.S. Nandan Kanan for help.

