

SHORT NOTE

Capture myopathy in an African Lion.

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ABSTRACT

Capture myopathy has been recorded in a variety of game species, but not previously in the African lion *Panthera leo*. During October 1986 six lions were hunted with rifles, dogs and gin traps by cattle farmers on land bordering the Etosha National Park, Namibia. On the third day of the hunt the single surviving lion was immobilized by Nature Conservation officials. Respiratory failure and death resulted. A necropsy revealed pale areas in skeletal muscles diagnosed microscopically as Zenker's hyaline degeneration and necrosis. Acute haemorrhage occurred in the lung tissue and adrenal glands. The total drug dosage used for this lion was 9.2 mg/kg ketamine HCL and 6.7 mg/kg xylazine HCL. In contrast to routine lion capture procedures in Etosha National Park, this lion was severely stressed prior to immobilization and this precipitated fatal capture myopathy.

INTRODUCTION

The disease known as capture myopathy is synonymous with "overstraining disease", "stress myopathy" and "white muscle stress syndrome". In southern Africa it has been observed in 19 different antelope species as well as buffalo *Syncerus caffer*, black rhinoceros *Diceros bicornis*, giraffe *Giraffa camelopardalis*, Hartmann's mountain zebra *Equus zebra hartmannae*, plains zebra *Equus burchelli*, primates and birds (Basson & Hofmeyr 1975; Harthoorn 1976; Hofmeyr 1973, 1976). To our knowledge there has been no published account of this disease in the African lion *Panthera leo*.

The symptoms of Capture Myopathy can occur directly after the capture of the animal or the onset can be delayed for a period of up to one month after the capture operation. Affected animals may show the following signs: tachycardia, hyperpnoea, hyperthermia, paresis, paralysis, torticollis, myoglobinuria and in some cases acute heart failure (Basson & Hofmeyr 1975; Harthoorn 1976).

Precipitation of the disease is generally caused by excessive stress induced by fear, anxiety, hyperthermia and overstraining of muscles. Once the symptoms are established, clinical treatment seems to be of minimal value (Hofmeyr 1973). Minimizing stress is presently the most efficient prophylactic measure, especially if combined with tranquillizers (Hofmeyr 1973).

HISTORY AND CLINICAL SYMPTOMS

Lion prides or individuals near the perimeter of the Etosha National Park are occasionally responsible for stock losses on adjacent farmlands. Control measures used by the farmers include shooting, hunting with dogs, using poisoned bait and gin traps. When possible, officials of the Directorate of Nature Conservation attempt to return escaped lions to their territories,

either by immobilizing them or by attracting them back into the park with bait.

During October 1986 the Ondongab lion pride, consisting of six individuals, left the park and killed seven head of cattle on farmland. The farmers retaliated by destroying five lions using gin traps and hunting the remaining lion with the aid of dogs for three days over a distance of about 20 km.

On the third day Nature Conservation officials located the surviving sub-adult male on farmland next to the park fence. The lion was wild and extremely nervous. A fresh carcass was placed at a large gap in the fence but it did not attract his attention. During the following 8h several unsuccessful attempts were made to dart or lure the animal back into the park. Attempts to dart him increased his apprehension and on six occasions he charged, injuring himself by colliding into the fence and vehicle. After chasing the animal by vehicle for about one kilometer, a dart containing 630 mg ketamine HCL (CI-581) plus 300 mg xylazine HCL, was fired successfully. The lion was immobilized for 30 min before it showed signs of recovery and another 300 mg ketamine HCL plus 375 mg xylazine HCL was administered intramuscularly. The animal weighed approximately 100 kg. This brought the total dosage for the lion to 930 mg ketamine HCL plus 675 mg xylazine HCL. The heart rate and respiration became depressed after 20 min. Tolazolene, used as an antagonist for xylazine HCL (Van Wyk & Berry 1986), was administered intramuscularly at a rate of 4 mg/kg. The respiration and pulse improved slightly, but the animal died one hour after immobilization despite thoracic compression techniques.

NECROPSY FINDINGS

Focal pale areas approximately 3 x 5 cm were found in the muscles of the hindlegs and the *M. longissimus lumbalis*. An estimated 80% of the lung tissue showed

acute diffuse haemorrhage and the edges of the lobes were emphysematous. The carcass was generally cyanotic. Focal disseminated pinpoint haemorrhages were seen in the epicardium. Adrenal glands were haemorrhagic and the cortex was atrophic. The kidneys showed mild swelling. On histopathology the muscles of the hindlegs and *M. longissimus lumbalis* showed Zenker's hyaline degeneration and necrosis.

DISCUSSION

During 106 previous lion immobilizations no suppression of the heart rate or respiration was observed. Very little stress occurred during routine immobilizations.

Recommended dosages are: 8 - 10 mg/kg ketamine HCL and 8 mg/kg xylazine HCL (Basson & Hofmeyr 1975); 11 mg/kg ketamine HCL and 1,8 mg/kg xylazine HCL (Hofmeyr 1976); 12 mg/kg ketamine HCL (Smuts 1973); 8,2 mg/kg ketamine HCL and 3,2 mg/kg xylazine HCL (Van Wyk & Berry 1986). The total dosage used to immobilize this lion thus coincides with these dosage levels.

It is evident that this lion was severely stressed over an extended period when hunted by farmers and his exhaustion was aggravated by immobilization attempts. This resulted in the precipitation of fatal capture myopathy.

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