



Tetanus in Uda Ram: Report of Two Cases

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INTRODUCTION

Tetanus is a neuromuscular disease of almost all mammals caused by neurotoxin produced by *Clostridium tetani* under anaerobic conditions (Driemeier *et al.*, 2007). The bacterium is found in the gastrointestinal tract of herbivores and humans and is mostly shed in faeces particularly in healthy horses. The bacterial spores can survive for years in the soil and it was found to be present in 30 to 40% of soil samples (Radostits *et al.*, 2007). All mammals are susceptible, although degree of susceptibility between species varies. However, small ruminants and horses are known to be the most susceptible species than other mammals (Wernery *et al.*, 2004; Driemeier *et al.*, 2007). Case fatality rate is lower in adult cattle, but may be as high as 80% in young ruminants. The causative agent, *Clostridium tetani* gains entry into the body of animals through skin injury or deep contaminated wounds. Under anaerobic conditions, the bacteria multiply producing a potent neurotoxin (tetanospasmin) (Harish *et al.*, 2006). The clinical signs associated with tetanus include hyperaesthesia, convulsion, bloat, muscular rigidity and ascending tetany of the skeletal muscles including respiratory muscles leading to asphyxia and death (Driemeier *et al.*, 2007; Radostits *et al.*, 2007; Muralidharan *et al.*, 2010). The common predisposing factors of tetanus in small ruminants are fighting, dog bites, contaminated umbilical wound, oral injury by fibrous thorns and skin irritation inflicted by corroded metal or iron, wood and rope (Harish *et al.*, 2006; Muralidharan *et al.*, 2010). However, infection could also result following orchidectomy, dehorning, tattooing, hoof trimming, docking, drug injection, ear tagging, vaccination, postpartum navel contamination, uterine retention, uterine prolapse and accidental injury in farm animals (Kumar Das *et al.*, 2011; Upadhyay *et al.*, 2013).

Diagnosis of tetanus is often made on the basis of history, clinical signs and physical examination (Radostits *et al.*, 2007). However, the growth of anaerobic bacilli with terminal spore from a culture wound swab is suggestive of *Clostridium tetani* (Harish *et al.*, 2006; Lotfollahzadeh *et al.*, 2018). Management of tetanus is difficult, time consuming, expensive and often unrewarding especially when presented late. This involves the use of Penicillin to prevent further growth of *C. tetani*, antitoxin for neutralization of unfixed neurotoxin, muscle relaxant for the induction and maintenance of muscle relaxation and supportive therapy until all the neurotoxin has been destroyed or eliminated (Harish *et al.*, 2006; Radostits *et al.*, 2007; Lotfollahzadeh *et al.*, 2018). We, therefore, report two cases of clinical tetanus in rams due to injuries sustained during fighting.

CASE HISTORY

Case 1

A two-year-old 55kg Uda ram was presented to the University of Ibadan Veterinary Teaching Hospital with complaint of dullness and anorexia observed a week earlier. The owner also observed bloat two days prior to presentation and had administered palm oil but did not resolve. History further revealed that the animal usually participated in ram fighting and has no previous exposure to any form of vaccination.

On physical examination, the clinical parameters revealed pyrexia (41°C), tachypnea (60 breaths per minute), tachycardia (135 beats per minute) and normal mucous membrane. The ram was observed to be depressed and recumbent with intermittent convulsion (Plate IA). Other signs observed included prolapsed third eye lid, locked jaws, opisthotonus and unhealed wound covered by matted hair at the neck region caudo-lateral to the left ear lobe (Plate IB). Laboratory

investigation was not conducted because the owner was not ready to bear the financial implication.

Case 2

A three-year-old 63kg Uda ram was presented with history of depression and anorexia two days prior to our visitation. Further history revealed that the ram had been very aggressive since it was introduced to the farm over a year prior to this incidence and often bullied other rams. The ram had history of injuries which has been treated by the owner. On physical examination, the ram was found to be pyrexia (41.5°C) and tachypneic (52bpm) but with normal heart rate (70bpm) and normal mucous membrane (pink). Bloat, trismus (locked jaws), drooling of saliva, intermittent convulsion and difficulty in walking were the other signs observed. When forced to walk, the ram moved with stiff-legged gait (Saw-horse posture) (Plate IIA), and later fell on lateral recumbency with opisthotonus (Plate IIB). Unfortunately, we could not access any nearby laboratory for further investigation.



Plate I: Ram1 showing stiffness of the limbs with opisthotonus (A) The wound injury (black arrow) was revealed after the hair covering the area was clipped (B).



Plate II: Ram 2 showing drooling salivation, bloated abdomen and stiffness of the limbs (saw-horse stance) (A) and later exhibited lateral recumbency with opisthotonus (B).

MANAGEMENT

Case 1

The ram was treated with Penicillin-Streptomycin 20/20 (Nanjing Vetop Pharma Co., Ltd) at 1ml (200,000IU/200mg) of Penicillin-Streptomycin/25kg intramuscularly, 1,500IU of Anti-Tetanus Serum (ATS) intramuscularly, 500mls of 5% Dextrose infusion intravenously and Diazepam 10mg intravenously. The wound was debrided, cleaned with mild antiseptic (0.05% Chlorhexidine), copiously flushed with diluted hydrogen peroxide and penicillin ointment was applied topically. The ram was kept in dark room to control hyperaesthesia.

Case 2

The treatment was commenced with Penicillin-Streptomycin 20/20 (Nanjing Vetop Pharma Co., Ltd) at 1ml (200,000IU/200mg) of Penicillin-Streptomycin /25kg intramuscularly, 1,500IU of Anti-Tetanus Serum (ATS) intramuscularly, 500mls of 5% Dextrose infusion intravenously and Diazepam 10mg intravenously. The ram was isolated from the herd.

OUTCOME AND DISCUSSION

Ram1 died few hours after the treatment commenced. Post mortem examination was suggested but the client declined to submit the carcass. Ram2 was found dead

when we visited the farm the following day for follow up treatment. Post mortem examination was carried out on the carcass, but no significant finding was recorded. Consequently, the remaining rams in the flock were inoculated with anti-tetanus serum and tetanus toxoid for immediate and longlasting protection respectively.

Tetanus in ruminants have been frequently reported following dog bites, fighting, snake bites and contaminated umbilical wound (Muralidharan *et al.*, 2010). Incidence could result following routine procedures such as dehorning, castration, ear tagging and hoof trimming (Harish *et al.*, 2006; Meseko & Oluwayelu, 2012; Upadhyay *et al.*, 2013). In this report, tetanus was diagnosed based on the clinical manifestations, history of injury from fighting and physical examination. Due to the distinct clinical signs especially with history of injury and lack of tetanus immunization, full-blown tetanus can rarely be confused with other diseases (Meseko & Oluwayelu, 2012). However, some of the differential diagnoses include hypomagnesemia, strychnine poisoning, laminitis and muscular dystrophy (Harish *et al.*, 2006). Some of these similar conditions were ruled out based on the observable difference in the clinical manifestations. For instance, laminitis and

muscular dystrophy also cause a stilted or stiff gait, but often not accompanied with bloat and prolapsed of the third eyelids (Harish *et al.*, 2006). The clinical signs of stiff-legged gait, bloat, trismus, opisthotonus and intermittent convulsion as observed in this report were similar with signs of classical tetanus reported by earlier authors (Harish *et al.*, 2006; Muralidharan *et al.*, 2010; Lombar & Zadnik 2013; Lotfollahzadeh *et al.*, 2018). Further laboratory investigations could not be conducted because the owner of ram1 was not ready to bear the financial implication while laboratory services could not be accessed nearby for ram 2. The wound sustained from fighting by the ram1 could be the medium through which *C. tetani* gained entry into its body since the wound was not treated promptly and appropriately. The unhealed wound was covered with matted hair, which could have created anaerobic condition favouring the proliferation of *C. tetani*. Although no wound was observed on ram2 when examined, but had a history of sustained injuries from fighting in the past which has been treated by the owner. Another probable contributing factor noticed was the filthy nature of the pen where ram2 was housed. Unhygienic environment has been identified as a veritable medium for tetanus spore to thrive (Meseko & Oluwayelu, 2012).

The treatment regimen followed in this report was in line with Radostits *et al.* (2007) recommendations targeted towards elimination of *C. tetani*, neutralization of unfixed neurotoxin and the induction and maintenance of muscle relaxation until all the neurotoxin has been destroyed or eliminated. The use of antitoxin is often unrewarding once classical signs are evident (Upadhyay *et al.*, 2013). The mortalities recorded in this case despite the treatment initiated were similar to report earlier documented (Lombar *et al.*, 2013; Upadhyay *et al.*, 2013). Cattle are known to respond better than horses and sheep, yet treatment is not significant in cattle

with fully developed tetanus (Radostits *et al.*, 2007). Nevertheless, recovery from tetanus in animal after conventional treatment has been reported (Harish *et al.*, 2006; Kumar Das *et al.*, 2011). Mortalities recorded in this report could therefore be ascribed to late presentation for treatment and absence of previous immunization against tetanus. Necropsy of ram2 revealed no significant findings. This is similar with the report of Harish *et al.* (2006) on necropsy of goat and Lotfollahzadeh *et al.*, (2018) on necropsy of sheep that died of tetanus.

Despite the high fatality rate and the socio-economic implications associated with this disease, some ram owners still indulge in the act of ram fighting which predisposes ram to tetanus as observed in this report. Our interaction with some of the ram owners who indulges in ram fighting revealed that it is often done for recreational or gaming/ betting purposes. This underscores the importance of reporting this case in order to sensitize ram owners who indulges in the act of ram fighting and that suspected tetanus case or injury cases that may predispose animal to tetanus should be reported to the veterinarian for prompt intervention. More so, laws should be enforced to restrict people from this cruelty practice. This view is further substantiated by other report that there is an urgent need to enforce regulations in Nigeria to reduce the incidence of tetanus in animals and promote better animal care and welfare (Meseko & Oluwayelu, 2012).

In addition, it is recommended that vaccination against tetanus should be incorporated as part of routine prophylaxis measures in farm animals and aggressive animals should be appropriately tamed to curb unnecessary injuries. Nevertheless, in situation when wound becomes inevitable such as after parturition, surgical procedures or accidental injuries, wound should be treated promptly along with anti-tetanus serum for immediate protection. In conclusion, suspected cases

of tetanus or incidence that may predispose animal to tetanus should be reported to a veterinarian for prompt intervention.

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