

An Outbreak of Tetanus in Ramnad White Sheep in Organised Farm due to Ear Tagging and its Therapeutic Management

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Abstract

Tetanus is a sporadic disease and outbreaks are being reported due to the pathogenic *C. tetani* spores and production of toxins. The present study describes about a tetanus outbreak in fattening lambs belonging to a private farm in Adhirampattinam block, Thanjavur district which were ear tagged for identification. The presence of wounds near the ear region suggestive of formation of scabs in same sheep speculated for *C. tetani* infection. On clinical examination, rigid muscles of fore and hindlimbs with erected ear and mild bloat within coordination and trysm suggested more to *C. tetani* infection. Growth of ear swabs/scab in anaerobic culture revealed a Gram +ve bacilli with terminal spores. Administration of strepto penicillin for 3 - 5 days at 2.5 g/day subsequently reduced the fatality of lambs. Vaccination was advised to carried out in the pregnancy rams in future with strict adoption hygienic practices during lambing.

Keywords: *Clostridium tetani*; Tetanus; Tattooing; Debudding; Castration

Introduction

Tetanus in sheep is caused by *Clostridium tetani* due to wounds while tattooing, debudding, castration etc. This organism is found in the soil upto 30 - 40% and the guts of animals, especially horses and in the faecal contaminated soil. Surveys in different areas of the world shows that it is present in 30 - 40% of soil samples. The disease is characterised by muscle stiffness, trismus, nystagmus, general. The unhygienic management of these procedures allow the organism to invade and cause tetanus in sheep. The present study deals about the tetanus outbreaks in lambs brought for fattening in a private farm in Adhirampattinam block, Thanjavur district which were ear tagged for identification and for insurance coverage.

Materials and Methods

Under the insurance coverage, 120 lambs and 2 weeks of age were ear tagged. After 11 days, death of 10 animals were reported with symptoms of tetanus in Adhirampattinam block of Thanjavur dist., Tamil Nadu. After 2 days, another 20 animals died with the same symptoms. Ailing animals were also reported with stiffness of fore and hindlimbs, dullness, pyclocreation, anxious expressions for sound and light mild bloat, salivation, prolonged third eyelid etc. and the case fatality was more than 85%. The presence of plastic tag on the ear with a wound was the most common feature in all ailing animals. The wound lesions and parts of it were collected and inoculated in

Robertson's cooked meat media at 37°C for 72 hours in Anerobic box (Himedia, Mumbai). Blood smears from the wound with ear were collected from ailing and healing animals for testing at the laboratory for staining and implementation of biochemical tests for confirmation of *C. tetani*.

A 3 ml of blood sample was collected from the jugular vein of each sheep using vacutainer (EDTA Coated) for estimation of haematological parameters as per Coles, 1986. The total erythrocytes count (RBC), were estimated by hemocytometer, the red cells diluted using isotonic solution Hayem's fluid and total leucocyte count (WBC) was estimated by hemocytometer using Turke's solution as diluting fluid. The hemoglobin concentration (Hb) estimation was done by acid hematin method (Sahli method). The packed cell volume (PCV), was estimated by Microhematocrit method. The blood indices such as mean corpuscular volume (MCV fl) = $PCV \times 10 / RBCs \text{ count}$, mean corpuscular hemoglobin (MCH pg) = $Hb \times 10 / RBCs$ and mean corpuscular haemoglobin concentration (MCHC %) were simultaneously carried out. The platelet count was done using hemocytometer ammonium oxalate diluting fluid.

Statistical analysis

The student t-test was done to show significant differences in hematological parameters between affected and uninfected infected sheep due to tetanus (Niazi, 2004).

Results and Discussion

After 48 hrs anaerobic incubation, the stained smears by Gram's method showed G +ve bacilli with terminal spores suggestive of *C. tetani* which was earlier reported by Constable., *et al* [1]. The discrete colonies (2 - 5 mm) on blood agar with slightly raised colonies of semi-translucent gray with irregular rough margins and surrounded by a narrow zone of hemolysis. As reported by Smith [2]. *C. tetani* spores were round and terminal, giving a characteristic shape usually termed "drumstick". The same tissues from healthy sheep were found negative for *Clostridium tetani*. The haematological and biochemical alteration showed lesser haemoglobin (4.9 gm%) and milder neutrophilia ($6.4 \times 10^3 / m$).

Hence the present study suggest that contaminated wound with soil are due to spores of the *C. tetani* which would have invaded and caused the tetanus with is in accordance with Smith and Sherman [3] and Adak., *et al* [4].

The plastic tag when punched for ear tagging created air tightness in the ear wound predisposing anaerobic condition for *Clostridium* group of organism (Chandramoile., *et al*. 2009). As tetanus in farm animals caused high fatality rate with long convalescence reported by Muralidharan., *et al*. [5] adds more points to ponder over the ear tagging in sheep in a sterile manner. As in our case the animals were subsequently treated with strepto-penicillin injection being the choice for 4 - 6 days as described by Radostatis., *et al*. [6] along with anti-inflammatory Meloxicam injection showed good response for the remaining ailing animals. Strict hygiene was advised with change of bedding materials and shed cleaning was implemented and sheep were shifted to another shed for prevented the spread. Moreover, surgical operations/managerial procedures involving Animal Husbandry practices in sheep husbandry should be performed with sterile hygiene in neonates and proper disinfection of umbilicus will prevent tetanus.

Conclusion

Several authors have previously reported that tetanus was successfully treated with antimicrobials and proved good in our study also. Moreover, in our report *Clostridium tetani* would have been sourced by the highly contaminated instruments such as ear applicator, unhygienic ear tag placement and the site of application. In our case it was mostly carried out at the base of ear and the wound created was being unknown to the farmer as it was hidden and the prolonged time led to existence of *C. tetani* leading to tetanus in the sheep. As vaccination for tetanus at birth would have prevented tetanus but it is not a common practice in this agrarian region of Tamilnadu where prevention of *C. tetani* with standard hygienic measures of using sterile ear applicator as well as swabbing the base of ear prior to tagging will help in eradicating the wound condition resulting from ear tagging. To summarise, *C. tetani* was identified in sheep in a farm

with contaminated ear wound which had resulted due to poor hygienic conditions on ear tagging process and successfully treated with antibiotics such as Streptopenicillin and NSAID's like Meloxicam injection for 3 - 5 days shoed eventful recovery. The haematological indices of *Clostridium tetani* infected animals showed RBC's (3.50 ± 0.04), PCV (15.50 ± 0.10), Hb (5.17 ± 0.03), MCV (38.06 ± 0.40), MCHC (21.15 ± 0.22), WBC (10.10 ± 0.13), Neutrophil (4.21 ± 0.04), Lymphocyte (6.30 ± 0.09), Monocyte (0.32 ± 0.00) Eosinophil (0.06 ± 0.00). This article alerts the sheep farmers to improve the sanitary measures to prevent *C. tetani* infection in sheep which are more vulnerable among the farm animals and regular practise of tetanus toxoid vaccination for pregnant rams was recommended to avoid these type of infections in future.

Bibliography

1. Constable PD., *et al.* "Veterinary Medicine, a Textbook of the Diseases of Cattle, Horses, Sheep, Pigs and Goats". 11th edition (2017): 1360.
2. Smith LDS. "*Clostridium tetani*". In: The Pathogenic Anaerobic Bacteria. 2nd edition (American Lecture Series no. 980). Springfield IL: Charles C. Thomas (1975): 177-201.
3. Smith MC and Sherman DM. "Goat Medicine". 2nd edition. Wiley-Blackwell: Hong Kong, Printed in Singapore (2009).
4. Adak K., *et al.* *Journal of Interacademicis* 6 (2002): 628.
5. Muralidharan J., *et al.* "Tetanus in sheep of an organized livestock farm- a case report". *Indian Journal of Field Veterinarians* 5 (2010): 43-44.
6. Radostits OM., *et al.* In *Veterinary Medicine*, Bailliere, Tindal, London (1994).
7. Robson S. "Clostridial diseases in cattle" (2007).

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