

## **AN OUTBREAK OF TETANUS IN AN ORGANISED GOAT FARM ALONG WITH THERAPEUTIC MANAGEMENT OF CAUVERY DELTA ZONE, TAMILNADU**

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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. Mostly tetanus outbreaks have been reported in sheep flock and this present study describes about a tetanus outbreak in goats belonging to a private farm in Adhirampattinam block, Thanjavur district. The goats undergone ear tagging for identification and insurance coverage in the farm. A total of 10 goats presented for treatment revealed presence of wounds near the ear region suggestive of formation of scabs leading to speculation for *C.tetani* infection. On clinical examination, rigid muscles of fore and hindlimbs with erected ear pinnae, mild fever, third eyelid prolapse and mild bloat with in-coordination and trysm suggested more to *C.tetani* infection. Growth of ear swabs / scab in anerobic culture revealed a Gram +ve bacilli with terminal spores owing to introduction of contaminated instruments which was used for ear tagging of goats. Administration of Strepto-penicillin for 3-5 days at 2.5g/day subsequently reduced the fatality of lambs after treatment. This report also suggests that factors like wound exudation would have created a favourable environment of anaerobiosis for germination of spores of *C.tetani* and subsequent toxin production. Vaccination was advised to carried out in the pregnant does in future with strict adoption hygienic practices esp. during kidding season prior to onset of monsoon.

**Keywords:** Tetanus-goat-ear tagging-*C.tetani*.

### **Introduction**

Tetanus in small ruminants is caused by *Clostridium tetani* due to wounds while performing practices such as castration, tattooing, debudding and hoof trimming. This organism is found in the soil upto 30-40% and the guts of animals, especially horses and in the faecal contaminated soil (Muralidharan *et al* .2010; Constable *et al* 2017). Tetanus toxoid (TT), a non-toxic form of TeNT is used for the prevention of tetanus disease. The most susceptible species other than humans for tetanus are small ruminants and horses. (Aslani *et al* 1998; Werenary *et al* 2004). Survey in different areas of the world shows that it is present in 30 – 40% of soil samples. (Radostits 1994; Robson 2007). The most important cause of the disease is due to release of neurotoxins produced by the *C.tetani* such as tetanolysin and tetanospasmin

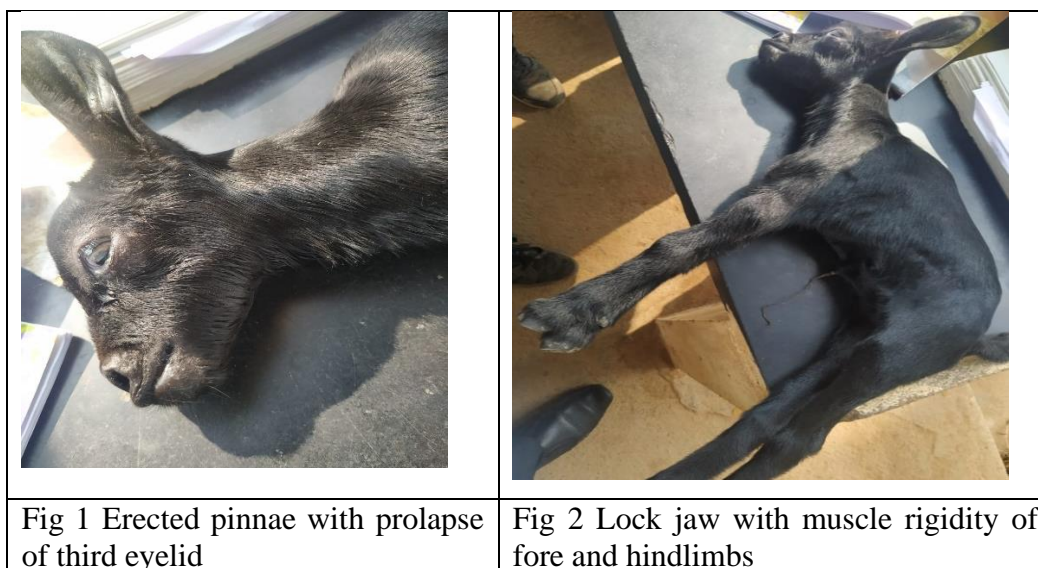
.Among the two toxins, tetanolysin lyse the cell membrane and create the anerobic environment for prolonged growth of *C.tetani* leading to muscle stiffness, trismus and nystagmus subsequently convulsions.(Singh *et al* 2000). The unhygienic management of these procedures allow the organism to invade and cause tetanus in goats and sheep. There exist evidence of more reports of tetanus outbreaks in sheep rather than goats and hence the present study deals about the tetanus outbreak in a goat brought for treatment from a private farm in Adhirampattinam block, Thanjavur district .

### **Materials and Methods**

As per the history received, under the insurance coverage a total of 120 kids (2 weeks of age) were ear tagged. After 11 days, death of 10 animals were reported in goats of Nondescript breed with symptoms of tetanus in Adhirampattinam block of Thanjavur dist., Tamilnadu. After 2 days, another 20 animals died with the same symptoms. The history details that ailing animals were also reported with stiffness of fore and hindlimbs, dullness, anxious expressions for sound and light, mild bloat, salivation, prolonged third eyelid and the case fatality was more than 85% .On thorough disease investigation, the affected goat revealed signs of mild fever, teeth grinding with rigidity of cervical muscles and recumbency (Fig 1 and 2). 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<sup>0</sup> C for 48 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 admission of biochemical tests for confirmation of *C.tetani*.

### **Results and Discussion**

After 48 hrs anerobic incubation, the stained smears by Gram's method showed G +ve bacilli with terminal spores suggestive of *C.tetani* which was earlier reported by Chandranaik *et et al.* 2009). 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 zone of hemolysis. As reported by Smith 1975. *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 present study suggest that contaminated wound with soil and due to spores, the *C.tetani* would have invaded and caused the tetanus with is in accordance with Smith and Sherman (2009) .



The plastic tag when punched for ear tagging created air tightness in the ear wound predisposing anaerobic condition for Clostridium group of organism. (Chandranaiik *et al.* 2009). The exudation of fluid due to rubbing allowed the production of toxins inturn increasing the severity of the disease. A similar report by Valgarean *et al.* (2011) revealed that tetanus in male goat after a week of ear tagging due to unhygienic wear tag placement as there were no history of tetanus toxoid vaccination. Hence the animal were subsequently treated with Strepto-penicillin injection being the choice for 4-6 days as described by Radostits *et al.* (1994) and with anti inflammatory Meloxicam injection showed good response for the remaining ailing animals. A treatment protocol of Procaine penicillin injection @20000IU /kg bw for 5 days was advocated successful treatment of tetanus by Lotfollazaheb et al (2019) but in our study, another substitute of Strepto-penicillin was administered which was found effective as the mortality reduced in a week and came down to 5% after the treatment as described by Radostatis *et al.*(1994). Earlier reports of successful treatment of tetanus with antimicrobials in livestock (Bhikane *et al* 2005; Harish *et al.* 2006) supported this study as earlier intervention in kids with administration of tetanus toxoid will reduce the mortality in organised farms. Strict hygiene was advised with change of bedding materials and shed cleaning was implemented and goats were shifted to another shed for prevented the spread. Moreover surgical operations / managerial procedures involving Animal Husbandry practices in goat farm should be performed with sterile hygiene in neonates and proper disinfection of umbilicus will prevent tetanus.

#### **Conflict of Interest**

The authors declare that they have no conflicts of interest.

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