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Clinical Efficacy of Long Acting Oxytetracycline (Terramycin La) with Penta Sulphate Mixture for the Management of Deg Nala Disease in Bovine

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ABSTRACT

Deg Nala disease which causes necrosis and gangrene of the dependent part in buffaloes and cattle is known to exist in the rice grown areas of India. The study was conducted to evaluate the efficacy of long-acting Oxytetracycline along with penta sulphate mixture for therapeutic management of Deg Nala disease in bovine. A total of 24 buffaloes suffering from Deg Nala disease were selected for present study. The disease was diagnosed on the basis of history and clinical signs i.e. gangrene on distal extremities (tarsus or carpus, tip of tail and ears) with wounds in coronary and fetlock area above the hoof. All the animals were treated with single intramuscular administration of long-acting Oxytetracycline (Terramycin LA) @ 20 mg / Kg body weight and oral administration of penta sulphate mixture of ferrous, copper, zinc, cobalt and magnesium sulphate @ 30gm daily for 20 days along with supportive therapy of tolfenamic acid and vitamins. The lesions were washed with potassium permanganate solution and dressed with 2% nitroglycerine ointment. 91.66 % animals showed complete clinical recovery. The study confirmed the clinical efficacy of long-acting Oxytetracycline with mixture of penta sulphate.

INTRODUCTION

Deg Nala disease which causes necrosis and gangrene of the dependent part of buffaloes and cattle is known to exist in the rice-growing areas of India and has been reported in a number of states like Bihar, Gujarat, Haryana, Uttar Pradesh and West Bengal. [1, 2, 3,4,5,6] Deg Nala disease named due to its first occurrence in the area bordering the course of Deg Nala (Deg river), has been reported in the Indian subcontinent since 1930[7]. This disease is more prevalent in winter months (November to February). It is characterized by necrosis, followed by gangrene of the dependent part of the body [6]. Due to this, the animal not only becomes week and emaciated, but also at time more or less become crippled causing enormous economic losses due to decreased productivity and functional capacity in the form of reduced milk production and draught capacity. This disease is believed to be cause by mycotoxicosis resulting from ingestion of rice straw contaminated with *Fusarium Spp.*[8, 5, 9, 6]. The present study was designed to evaluate the efficacy of long-acting oxytetracycline along with penta sulphate mixture for therapeutic management of Deg Nala disease in bovine.

History A total 24 buffaloes of 5-8 years age group were presented to Government Veterinary Hospital, Anand Nagar-Bhitari, Faizabad in the months of December 2012 to January 2013 with the history of dullness, reduced appetite, loss of milk production, unable to walk properly, lameness, stiffness and rough hair coat. All the presented animals had history of feeding of stored paddy straw.

Clinical Observation Clinical examination revealed loss of hairs at base of tail, alopecia, necrosis and gangrene on distal extremities (below tarsus or corpus, tip of tail and ears) and sloughing of hooves. All the physiological parameters (rectal temperature, pulse rate, respiration rate and ruminal movement) were normal in range. During course of study, almost all cases showed gangrene of tail, which was shrivelled and cold to touch. Invariably one or both ears showed dry gangrene. In one case muzzle and tip of tongue became gangrenous. In 4 cases the affected feet were swollen up to the knee, the hairs were denuded. Later wound appeared on coronet, fetlock, pastern, knee and hock region.

DIAGNOSIS

The history and clinical findings were sufficient to make confirmatory diagnosis as Deg Nala disease.

TREATMENT

The affected animals were treated with single intramuscular injection of long-acting oxytetracycline (Terramycin-LA, Pfizer Animal Health, 200 mg oxytetracycline / ml) @ 20 mg / Kg body weight with penta sulphate mixture (Ferrous sulphate-166 g, Copper sulphate-24 g, Zinc sulphate-75 g, cobalt sulphate-15 g and Magnesium sulphate-100 g) @ 30 g orally daily for 20 days. Besides these, single intramuscular administration of Tolfenamic acid (Maxxtol, Intas Pharmaceutical Limited) @ 4 mg / Kg body weight with vitamins A, D_3 and E (Intavita, Intas Pharmaceutical Limited) @ 5 ml were given as a supportive therapy. The lesions were washed with diluted solution of potassium permanganate and dressed with 2 % nitroglycerine ointment.

RESULTS AND DISCUSSION

Out of these 24 animals, 22 animals (91.66 %) showed complete clinical recovery after 20 days of therapy. The gangrenous portion the tail, tip of ears tongue and others affected part of body dropped off, although wound healed in the course of time.

Deg Nala has been reported to occur in various rice-growing parts of India and other parts of the world having similar climatologically condition and it is a cause of concern to the farmers having an impact on rural economy [5, 2, 6, 10]**.** Occurrence of Deg Nala diseases appears to be associated with the feeding of mouldy rice straw, as it is suspected to play some role, directly or indirectly, in the development of disease [3, 11]**.** Since occurrence of disease has been associated with feeding of rice straw, selenium toxicity is suspected to play some role directly or indirectly, in the development of disease [8, 18]. To rule out this as a possible cause of Deg Nala disease, the selenium content of rice straw, soil and tissue samples collected from affected as well as unaffected areas were estimated and compared with reported toxic level (0.9 to 6.7 ppm) in various fodder crops like berseem, paddy straw, lucerne, maize green and oat fodder, causing selenium toxicity [12]. This notion is further confirmed by fact that the symptom of chronic selenium toxicity takes a long period to develop i.e. several weeks to months [13] as compared to onset of Deg Nala disease. Further, the selenium content in tissue collected from experimental case of Deg Nala disease were found to be very low and comparable with normal animals. Kalra *et al.* (1977) suggested the possibility of the involvement of mycotoxins in the etiology of Deg Nala disease, occurring among buffalo and Zebu cattle in certain rice growing areas of India. The disease was observed in winter months

(November to February) when fungal infested rice straw was fed to buffalo and cattle. Buffaloes are more frequently affected than cattle and younger animals appear to be more susceptible. Karki (2009) observed all the sick animals from Deg Nala were having hypodermic, moist eczematous lesion in all over the body and on the tail, thigh, legs, udder, testicle with normal temperature and appetite. All the affected animals were treated with anti Deg Nala liquor and penta sulphate. Schoental (1980) reported 80 % cure rate with penta sulphate mixture. Makbool *et al*. (1997) observed 90 % cure rate with penta sulphate mixture with 2 % nitroglycerine ointment, 70 % cure rate with single administration of long-acting oxytetracycline with 2 % nitroglycerine ointment. In the present study, single administration of long-acting oxytetracycline, oral feeding of penta sulphate mixture with topical application of 2 % nitroglycerine ointment gives higher cure rate (91.66 %). Administration of tetracycline to affected buffalo at an early stage of the disease was effective [10].

Under suitable condition of humidity and temperature during winter months saprophytic fungi grow in the form of multiple dark specks on the rice straw kept in the open field. When this infested rice straw is fed in large quantities in the winter due to scarcity of green fodder, it produced lesion of Deg Nala disease. Fungi isolated from infected rice straw in these studies are known to produce mycotoxin which causes vasoconstriction resulting gangrene in dependent part [14]. In treating necrosis and gangrene of extremities vasodilating agent have beneficial role. Local application of 2 % nitroglycerine ointment acts as a vasodilator. Khajarem *et al.* (1990) reported the efficacy of Hydrated Sodium Calcium Alumino Silicate (HSCAS) in preventing Deg Nala disease due to high-affinity sorbent which can bind aflatoxins in gastrointestinal tract and thus significantly reduce their intoxication. Administration of tolfenamic acid reduces the inflammation and help in reliving the pain. Whereas injection of vitamins A D_3 and E help in regeneration of necrosed tissue increased tonicity and immunity of the body.

In the present study, out of 24 animals, 22 (91.66 %) showed complete clinical recovery. So, long-acting oxytetracycline with penta sulphate mixture is highly effective (91.66 %) against Deg Nala disease in bovine.

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