Clinical Management of Bovine Actinomycosis (Lumpy Jaw) in Cattle: A Case Report

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Abstract:
A cross breed Holstein Fresien male calf presented at ICD centre, Gadoora, Ganderbal, J&K with a swelling at mandibular region and leaking out pus contents and was diagnosed to be suffering from Bovine Actinomycosis/Lumpy Jaw/Big Jaw. The animal was treated for seven days and recovered successfully. The incidence of actinomycosis in cattle is higher as they are mainly fed with straw/Hay and ensilage. These kind of rough feeds injure the buccal mucosa of the animal and act as a predisposing factor for the occurrence of the disease. At field level successful treatment of actinomycosis in cattle can be done by parental administration of Penicillin in combination with Streptomyacin along with oral administration of Potassium Iodide and daily dressing of wound with 2% Povidone Iodine.

Keywords: Lumpy Jaw, mandibular, Holstein Fresien, Penicillin, Actinomycosis.

I. INTRODUCTION

Bovine Actinomycosis is a non contagious, chronic to sub acute infectious inflammatory progressive pyogranulomatous osteomyelitis of the bony tissues of the head region. In case of Lumpy jaw suppurative abscesses are more frequently seen in the mandible, maxillae, teeth alveolus or other bony tissues in the head. The disease is caused by Actinomyces bovis in cattle and Actinomyces israelii in humans. The disease is characterized by presence of pus in the mandibular or maxillary region or the affected sinuses containing sulfur granules having bacterial clumps (Hyland. V.C. et.al., 1993). The disease is also called as “lumpy jaw” in cattle and was first time described by LeBlanc in 1826 (Joyce, T.M., 1938). The disease has an effect on all age groups, breeds, and sex of cattle. Actinomycosis spp are normal flora of the gastrointestinal tract of ruminants and they gain entrance into tissues of oral mucosa through abrasions and penetrating wounds caused by wires or nails or coarse hay or sticks or thorns. It is important to note that Actinomyces bovis bacteria is of zoonotic importance and has got human health significance (A rare zoonosis) as it causes skin lesions, abscesses, bronchopneumonia and granulomas in humans. The sternum, ribs, and the spinal column is also affected in humans (Ruhrah J. VIII. 1899). Three cases of Pelvic Actinomycosis have been also reported from Taiwan over the past 40 years. Pathological signs include inflammation of the fallopian tubes, ovaries and pyometra (Hsu C.T.et.al., 1988). Actinomyces bovis is a gram-positive, anaerobic, filamentous, non-motile, nonspore forming, non capsulated, non haemolytic, nonacid fast pleomorphic rods to coccobacilli bacteria, many of which are filamentous or branching associated with ‘Actinomycosis/Lumpy Jaw’ in cattle. Actinomycosis has been recorded from various parts of India (Choudhary, S.S., 2016). The incidence of disease in cattle is higher as they are mainly fed with rough hay or ensilage. These type of feeds injure the buccal mucosa and there by predispose them to this infection. Then the organism is introduced to underlying soft tissues via penetrating wounds of the oral mucosa caused by straw or wires or thorns in the grasses. Actinomycosis in cattle is manifested by chronic osteomyelitis and rarefaction of the bones particularly the mandibular and maxillary bones which results in facial distortion. The alveoli of the roots of cheek teeth are frequently involved leading to lose of teeth, making chewing difficult (Radostits et al., 2007).

Which ultimately affects the feeding behavior of an animal. Sometimes ulceration occurs with or without tracts draining purulent discharges from the affected area. Due to the painful chewing animal refuses to eat and weight losses are evident leading to the economic losses in the livestock industry. Pulmonary actinomycosis cases in cattle has been also recorded by Biever et al.(1969). Diagnosis in Bovine actinomycosis can be done on the basis of history and clinical signs but the demonstration of gram-positive rods inyello wish sulfur granules from aspirated purulent discharges as well as bacteriological culture and histopathology are confirmatory. The organism appears gram positive long filamentous rods to coccobacilli exudate from active lesions.

II. CASE HISTORY AND OBSERVATION

A cross breed Holstein Fresien male calf presented at ICD centre, Gadoora, Ganderbal, J&K (Figure 1) with a history of unusual mastication andswelling at mandibular region, leaking out pus contents. The animal had a hard, painless, diffused swelling at the mandibular region with supplicative discharge. Clinical examination of the animal revealed the involvement of mandible and soft tissues with yellowish supplicative discharge containing sulfur granules (Figure 2). The important parameters like rectal temperature, pulse, and respiratory rates were 102.0°F, 82 beats/min and 27 breaths/min respectively.
III. TREATMENT AND DISCUSSION

Primarily the mandibular lesions were rewash with normal saline followed by flushing with 2% povidone iodine solution. Then the calf was treated with broad-spectrum antibiotic and non-steroidal anti-inflammatory drugs for seven days. Injection of penicillin and streptomycin at the rate of 10 mg/kg body weight (Dicrystin-S) daily along with injection of meloxicam @0.2 mg/kg body weight (Melonex) and oral administration of potassium iodide 6 gram daily for 7 days and daily local dressing of wound in the mandibular region with povidone iodine (Betadine) (Figure 3). A gauze of povidone Iodine was inserted regularly for five days to destroy pyogenic membrane till the healing of wound was completed. Animal got cured in 12 days (Figure 4). Actinomycosis bovis bacteria are sensitive to penicillin, streptomycin, bacitracin, oxytetracycline and cloxacillin. Dicryst in-DS has also recorded sensitive (Murthy, G. K and Dorairajan, 2008). Isoniazid has been successfully used in the treatment of actinomycosis in cattle as it arrested the growth of actinomycotic lesions (Rhodes, C.S.et.al., 1973). Treatment of Bovine Actinomycosis with streptomycin and potassium iodide at the rate of 6-10 gm/day orally for 7-10 days (Radostits et al., 2000) have also been found effective. Oral administration of potassium iodide in combination with penicillin and streptomycin or oxytetracycline has also been found effective in treatment of actinomycosis in cows (Pal et al., 1994 and Hussain 2006). Penicillin is the drug of choice for all clinical forms of actinomycosis in humans (Dwivedi. G.et.al., 2018). Several years ago carcass affected with actinomycosis was condemned but at the present time carcass showing only localized lesions without systemic lesions is passed for human consumption (Connaway J.W.et.al., 1935).

IV. CONCLUSION

Bovine Actinomycosis or lumpy jaw causes significant economic losses in livestock industry because of weakness of the affected animal, decrease in the productive value of an
animal and poor response to the daily clinical treatment as a result of late recovery by the animal. Abrasions or wounds in the oral cavity, caused by dry and coarse feeds fed to the animal are believed to be the primary cause of entry of organism into the animal. To prevent the occurrence of this disease, animals should be fed with smooth and water soaked straws to avoid damage to the buccal mucosa. Affected animals should be kept in separate paddocks and should be fed separately. Also, the affected animals should not be allowed to graze in pastures along with healthy cattle to prevent the contamination of grass, water, bedding and utensils by the animals. This will also help in prevention of infection to other healthy animals.

In conclusion, surgical intervention, through the removal of pus from the affected area along with washing with normal saline solution followed by flushing with 2% povidone iodine solution and parenteral administration of broad-spectrum antibiotic (Penicillin and Streptomycin) and non-steroidal anti-inflammatory intramuscularly with oral administration of Potassium Iodide for five days is an effective method for the treatment of bovine actinomycosis in field conditions.

V. REFERENCES


