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Case Report

Field Surgical Intervention of Bovine Actinomycosis

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ABSTRACT

Actinomycosis, or lumpy jaw, is an important cause of economic losses in livestock because of its widespread occurrence and poor response to the routine clinical treatment. The present study describes a typical case of bovine actinomycosis in a seven-month pregnant Sahiwal heifer with a hard swelling on the middle of the maxilla bone at the level of the central molar teeth. Tentative diagnosis was made through clinical signs. After maturation of the swelling, the area was incised under local anesthesia and debridement of the wound was achieved by sharp surgical debridement and mechanical debridement. Pus, having the appearance of sulphur granules, was completely removed from the excised cavity, which was closed by applying mattress sutures. Adjunct therapy of broad-spectrum antibiotic was administered intramuscularly for five days as a post-operative measure. Catamnesis revealed that the healing was complete in 15 days with no recurrence and untoward consequences.

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INTRODUCTION

Actinomyces and the closely related *Nocardia* species, once believed to be fungi because of their branching filaments, are now classified as higher prokaryotic bacteria (Raymond and Foglia, 1998). *Actinomyces bovis* is the primary etiologic agent of actinomycosis or lumpy jaw in the cattle and is an important cause of economic losses in livestock because of its widespread occurrence and poor response to the routine clinical treatment (Blowey and Weaver, 1990). The losses occur directly from the debilitation of affected cattle and indirectly from the slaughter of animals. *Actinomyces bovis* is a symbiotic inhabitant of oral mucosa that gains access through the abrading and penetrating injury to the buccal mucosa and dental alveoli. Involvement of adjacent bone frequently results in facial distortion, loose teeth and dyspnea due to swelling in the nasal cavity (Thomas, 1998). The most common manifestation of this disease in cattle is a rarefying osteomyelitis of the bones of the head, particularly mandible and maxilla, though the rare cases may involve soft tissues, particularly the alimentary tract (Bertone and Rebhum, 1984).

Various treatment protocols have been documented in the literature for the lumpy jaw but with sub-satisfactory responses (Nusbaum, 1965; Thomas, 1998; Brunton *et al*., 2005; Mettler *et al*., 2009). The present article describes a typical case of lumpy jaw in a cow which achieved complete recovery with 'sharp surgical' and 'mechanical methods' of surgical debridement combined with systemic antibiotic therapy.

HISTORY AND CLINICAL EXAMINATION

A three-year old, seven month pregnant Sahiwal heifer of about 400Kg was presented with the complaint of a gradually increasing swelling on the middle of the maxilla bone at the level of the central molar teeth. Anamnesis revealed that the owner had increased the dry fodder (wheat straw) in the diet for last one month and the swelling appeared about 15 days ago. Animal had partially lost its appetite and its regurgitation frequency had decreased. Clinical examination revealed an immovable, painless, hard swelling on the middle of the maxilla bone at the level of the central molar teeth with no opening or discharge through the skin (Plate 1). The vital parameters of health (temperature, pulse, respiration) were within the normal ranges for cattle (Reece, 2004). The oral cavity was examined for the presence of any foreign object or dry feed jammed between the teeth and cheeks. The tentative diagnosis of actinomycosis was made on the

basis of clinical signs, which was confirmed later by the presence of pus having an appearance of "sulphur granules" in the cavity of the lesion.

TREATMENT

Preoperative measures

The hard swelling on the maxilla bone was matured by topical application of Kaolin Poultice (Plate 1) twice a day for five days. This caused the swelling to break through the skin and discharge at two points.

Surgical intervention

The site was prepared for surgical intervention. The area was anesthetized by infiltrating 2% xylocaine hydrochloride (Akhter, 1999) in a circular fashion around the swelling. An approximately 7.5 cm long incision was made between the two openings to expose the underlying cavity containing pus. The pus having an appearance of yellowish "sulphur granules" was removed. Debridement and curettement of the wound was achieved by sharp surgical debridement using scalpel, curette and scissors, followed by mechanical debridement using dry cotton swabs (Leaper, 2000). The cavity was cauterized using $KMnO_4$ crystals and the wound was closed by horizontal mattress sutures pattern, using 2/0 chromic catgut (Frank, 1964).

Post-operative measures

The wound was dressed daily with tincture of iodine until complete healing, followed by removal of stitches on the 10th day post-operatively. Penicillin and streptomycin 5g/day intramuscular was given for five days as a post-operative measure (Radostits *et al*., 2005). Catamnesis revealed that the healing was complete in 15 days with no recurrence and untoward consequences when the animal was last examined two months after surgery.

DISCUSSION

Traditional therapy for lumpy jaw includes oral or intravenous dosing of iodides and/or antibiotics such as penicillin and streptomycin but with variable results (Nusbaum, 1965; Brunton *et al*., 2005; Radostits *et al*., 2005). Since the iodide dosing is time consuming and the antibiotics/antibacterials have poor penetration into the site of the infection (Radostits *et al*., 2005), proper treatment protocol for lumpy jaw is still awaited. For the proper management of the condition, the literature suggests that treatment of any sort is more likely to be of value when combined with surgical intervention (Leaper, 2000; Mettler *et al.*, 2009).

In the cow presently under discussion, the tentative diagnosis was made on the basis of clinical signs and was confirmed later on by the presence of pus like "sulphur granules" in the excised cavity (Blood and Studdert, 1988). Treatment was preceded keeping in view the role of proper debridement of the excavated cavity in healing. Appropriate debridement sets the stage for the conversion of chronic wounds into acute ones, with eventual healing (Ennis and Menesses, 2000). In the present case, sharp surgical and mechanical debridement along-with systemic antibiotics lead to complete recovery with no recurrence and complications. Thus, this procedure will hopefully be a better option to the field veterinarians for the effective treatment of cases of bovine actinobacillosis under field conditions.

Plate 1: Topical application of Kaolin Poultice for the maturation of the swelling.

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