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## Actinomycosis (Lumpy Jaw) in a jersey cross cow: A clinical case report

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### Abstract

Actinomycosis is a chronic, progressive granulomatous disease of cattle primarily affecting the bones of the head, particularly the mandible and maxilla. It is caused by *Actinomyces bovis*, a commensal organism of the bovine oral cavity that becomes pathogenic following mucosal injury. This case report describes the clinical presentation, diagnosis, and management of actinomycosis in a Jersey Cross cow presented with unilateral mandibular swelling, excessive salivation, and difficulty in prehension. Diagnosis was confirmed by clinical examination and demonstration of sulfur granules on Gram staining of pus samples. The animal responded favourably to surgical drainage and antibiotic therapy. This report highlights the importance of early diagnosis and combined medical-surgical intervention in the successful management of bovine actinomycosis.

**Keywords:** Actinomycosis, lumpy jaw, jersey cross, *Actinomyces bovis*, bovine bacterial disease

### Introduction

Actinomycosis is a chronic, suppurative, and granulomatous disease of cattle characterized by progressive osteomyelitis of the jaw bones, commonly referred to as “lumpy jaw.” The disease is caused by *Actinomyces bovis*, a Gram-positive, filamentous bacterium that normally inhabits the oral cavity and alimentary tract of cattle (Waksman & Henrici, 1943; Smego & Foglia, 1998) [5, 4]. Under normal conditions, the organism remains non-pathogenic; however, trauma to the oral mucosa caused by sharp feed particles, foreign bodies, or erupting teeth allows the organism to invade deeper tissues (Gupta & Sinha, 1978) [2].

The disease is distributed worldwide and primarily affects cattle, although sporadic cases have been reported in other domestic animals (An et al., 2006) [1]. Actinomycosis leads to significant economic losses due to reduced feed intake, weight loss, and premature culling. Diagnosis is generally based on characteristic clinical signs, supported by laboratory identification of sulfur granules in purulent exudate. The present case report documents a classical presentation of actinomycosis in a Jersey Cross cow and describes the diagnostic and therapeutic approach adopted.

### Case history and clinical examination

A Jersey Cross cow was presented with a history of progressive swelling in the left submandibular region for one week. The animal exhibited difficulty in eating and drinking, accompanied by excessive ropy salivation. The owner reported that the animal had been treated previously by a local practitioner with no improvement.

Clinical examination revealed a firm, immovable, and painful swelling over the left mandible. Palpation elicited pain, and a foul-smelling, serosanguinous discharge was observed from the lesion. Copious mucus discharge from the oral cavity and intermittent coughing were also noted. The animal showed reduced appetite and signs of discomfort during mastication. Based on the clinical findings, a tentative diagnosis of actinomycosis was made.



**Fig 1:** Jersey cross cow showing unilateral, firm swelling of the mandibular region (“lumpy jaw”), characteristic of actinomycosis, with marked facial asymmetry due to chronic granulomatous involvement of the jaw bones

### Diagnostic investigations

Pus samples were collected aseptically from the lesion following surgical opening of the mass (Figure 2). The pus

was inoculated into nutrient broth, which showed turbidity indicating bacterial growth in 24hrs post inoculation (Figure 3).



**Fig 2:** Pus sample aspirated aseptically from the mandibular lesion of the affected jersey cross cow using a sterile disposable syringe for laboratory examination and confirmatory diagnosis of actinomycosis

Microscopic examination of Gram-stained smears prepared from the pus revealed characteristic yellowish-white sulfur granules composed of Gram-positive branching filaments, confirming the diagnosis of actinomycosis (Figure 4). These findings were consistent with infection caused by *Actinomyces bovis*.

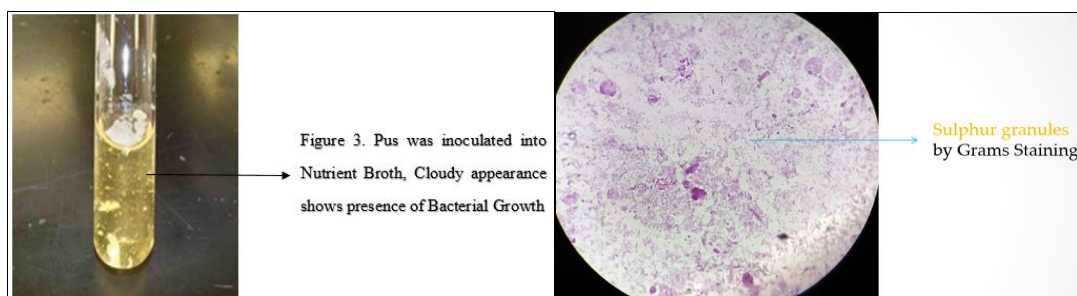


**Fig 4:** Gram-stained smear of pus collected from the mandibular lesion showing characteristic sulfur granules with Gram-positive branching filamentous organisms, confirming *Actinomyces bovis* infection in the affected jersey cross cow

### Treatment and management

The lesion was surgically opened using a sterile blade to evacuate the purulent contents, followed by thorough drainage and local wound management. Medical treatment consisted of:

- Inj. Streptopenicillin - 5g intramuscularly
- Inj. Chlorpheniramine maleate - 10mL intramuscularly
- Inj. Meloxicam - 15mL intramuscularly
- Inj. B-complex (Bivinal Plus) - 10mL intramuscularly

The animal showed gradual improvement with reduction in swelling, improved feed intake, and cessation of discharge following treatment in 5 days.

### Discussion

Actinomycosis is a well-recognized bacterial disease of cattle, particularly affecting the mandible due to its close association with oral trauma and dental alveoli (Gupta & Sinha, 1978) [2]. The unilateral hard swelling, pain on palpation, excessive salivation, and purulent discharge containing sulfur granules observed in the present case are classical features of the disease (Smego & Foglia, 1998) [4].

*Actinomyces bovis* is a commensal organism of the bovine oral cavity, and infection typically follows mucosal injury caused by coarse feed or erupting teeth, which explains the frequent occurrence of the disease in young and adult cattle (Waksman & Henrici, 1943) [5]. The chronic granulomatous reaction and progressive periostitis result in bony enlargement and fibrosis, making early intervention essential.

Laboratory confirmation through identification of sulfur granules remains a simple and reliable diagnostic method in

field conditions (Lewis, 1947) [3]. In the present case, Gram staining of pus provided confirmatory evidence of actinomycosis.

Combined surgical drainage and prolonged antibiotic therapy are considered the most effective treatment approaches. Penicillin-based antibiotics remain the drugs of choice, often supplemented with supportive therapy to control inflammation and secondary infections (Lewis, 1947) [3]. The favorable response observed in this case supports previous reports emphasizing early diagnosis and aggressive treatment.

### Conclusion

This case report highlights a typical presentation of actinomycosis in a Jersey Cross cow, emphasizing the importance of thorough clinical examination and simple laboratory techniques for confirmatory diagnosis. Prompt surgical intervention combined with appropriate antibiotic therapy resulted in successful clinical recovery. Early recognition and management are crucial to prevent disease progression and economic losses in affected cattle.

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