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ACTINOMYCOSIS IN A JAFFRABADI HEIFER

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ABSTRACT

Jaffarabadi heifer of about 2 years of age with the mass at jaw of mandible and history of not responding to treatment was referred to Veterinary Clinical Complex, Junagadh, Gujarat, India. Tissue pieces from the surgically removed mass received at the Department of Veterinary Pathology for histopathological diagnosis. Grossly, the growth was circular and hard. On cut surface, it was creamy white with multiple foci indicating the presence of pus and sulphur granules. Histology revealed the presence of characteristic sulphur granules surrounded by polymorphonuclear inflammation with rosettes and eosinophillic Splendore-Hoeppli material. Fibrous tissue proliferation is also noted. Tissue section found negative for fungal hyphae and acid-fast bacilli by periodic acid schiff and Ziehl-Neelsen stain, respectively. Based on clinical findings and histomorphological changes, the case was diagnosed as actinomycosis.

Keywords: *Bubalus bubalis*, buffaloes, actinomycosis, heifer, Jaffrabadi

INTRODUCTION

Actinomycosis is a chronic infectious disease, characterized by suppurative granulation and rarefying osteomyelitis of the skull particularly the mandible and maxilla bones (Radostits *et al*., 2007). The disease is sporadic and common in cattle, but occasionally reported in goats, pigs and horses (Mohamed *et al*., 2011). Organisms are commonly found in bovine oral cavities and infection occur through oral mucosa wounds caused by the injuries that occurred due to sharp pieces of fodder and inanimate objects. The disease commences as a painless, bony swelling on jaw bones and subsequently the swelling becomes hard, immovable and painful. Lesion forms sinus tract and communicate with skin to discharge its contents (Gensa, 2018). Literature survey revealed that very few reports are available on actinomycosis in buffalo, hence this interesting case is reported here.

CASE HISTORY AND CLINICAL OBSERVATION

This case report describes the histopathological diagnosis of mass located at

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jaw of mandible of approximately 2 years aged Jaffrabadi heifer. The animal was not responding to any treatment and referred at Veterinary Clinical Complex, College of Veterinary Science and Animal Husbandry, Junagadh, Gujarat, India for further diagnosis and treatment. The growth was excised by veterinary surgeon and tissue pieces received for histopathological diagnosis. Tissue samples were fixed in 10% neutral buffered formalin, washed, dehydrated in ascending grades of alcohol, cleared in xylene and embedded in paraffin to prepare blocks as per the standard procedure. Sections with 5 µm thickness were cut and stained with haematoxylin and eosin stain for histomorphological examination. Tissue sections were also stained with periodic acid Schiff and Ziehl-Neelsen stain to rule out the presence of fungal hyphae and acid-fast bacilli, respectively (Prophet *et al*., 1994).

RESULTS AND DISCUSSIONS

Actinomycosis is a chronic osteomyelitis caused by *Actinomyces bovis*. These organisms are large Gram positive, non-acid fast, branching, filamentous rods. The bacteria inhabitants of oral mucous membrane, tooth surfaces and gastrointestinal tract. The disease is characterized by the presence of pyogranulomatous reaction. Injury to oral mucous membrane is required for establishment of infection. The disease reported in variety of animal species, but very few reports are available on actinomycosis in buffalo. The presence of other aerobic organisms *viz*; *Staphylococcus aureus* may provide anaerobic condition for proliferation of *Actinomyces* (Nashiruddullah *et al*., 2004; Farooq *et al*., 2010). Further, such aerobic organisms secrete hyaluronidase and toxins, which help *Actinomyces* for proliferation in tissues (Schaal, 1998). In present case, grossly the growth was circular and hard and on cut surface it was creamy white with multiple foci indicating the presence of pus and sulphur granules. Microscopically, section showed multiple granulomas containing radiating bacterial colonies surrounded by severe infiltration of neutrophils. Occasionally, macrophages and plasma cells were seen. The edge of bacterial colonies covered with eosinophillic Splendore-Hoeppli materials (Figure 1). Fibrous tissue proliferation was also noted in the section. Looking at the chronic nature of the lesions, tissue sections were stained with special stains, but sections could not reveal the presence of fungal hyphae and acid-fast bacilli.

Occasional presence of macrophages and absence of giant cells in tissue section may attributed to relatively immature lesion in this case, however, severe accumulation of neutrophils surrounding bacterial colonies may be due to chemotaxis effect (Masand *et al*., 2015). Morphologically, the lesion described as chronic pyogranulomatous mandibular osteomyelitis with colonies of filamentous or branching organisms. Similar histomorphological observations have also been reported from Indian cow (Masand *et al*., 2015) and buffalo from unusual location of nasal granuloma (Chandratre *et al*., 2017). On the basis of clinical findings and histopathological changes in section, the case was diagnosed as actinomycosis.

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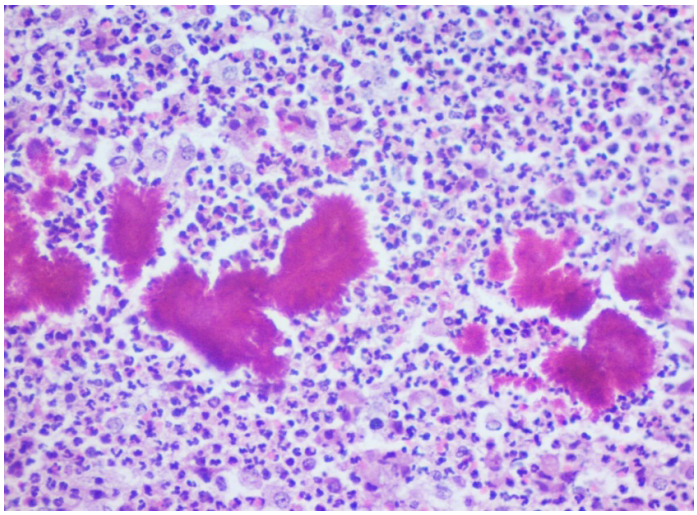


Figure 1. Granulomatous lesion containing sulphur granules with radiating bacterial colonies and eosinophillic Splendore-Hoeplii material surrounded by numerous neutrophils and few macrophages.

complete this work.

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