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NON-WOODY TONGUE ACTINOBACILLOSIS IN A COW: A RARE MANIFESTATION

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Actinobacillosis is an infectious disease caused by a Gram-negative coccobacilli, *Actinobacillus lignieresii,* reported world widely often as affecting the soft tissues especially tongue of cattle and sheep (Dirksen *et al.*, 2005; Radostits *et al.*, 2007). *A. lignieresii* is a commensal of upper digestive tract of ruminants. Traumatic erosion, ulcer and penetrating lesion induced by hard fibrous feed causes a breach in skin barrier integrity and can establish an infection (Brown *et al.*, 2007; Smith, 2009). In cattle, the classical presentation of infection is woody tongue, but also soft tissues like lymph nodes (retropharyngeal and submandibular) and other tissues of the head, pharynx, chest, flank, stomach, omentum and limbs can be affected (Radostits *et al*., 2007; Taghipour-Bazargani *et al*., 2010). Grossly, Actinobacillosis is characterized by the presence of granulomas with purulent discharges characteristically containing 'sulphur' granules. Microscopically, pyogranulomas with Splendore-Hoepelli phenomenon surrounded by fibrosis after acute local inflammation are the most common features. The present case describes the clinical manifestations, bacteriologic, gross and histo-pathologic characteristics of an unusual manifestation of actinobacillosis in a cow.

A 4thcalver cow was presented with a history of progressively growing red color cauliflower like growth of about 15 cm long on the dorsum of tongue, hypersalivation and difficulty in prehension and swallowing. The growth was confused with neoplasms, polyps or exuberant granulation tissue. Taking the condition of animal into consideration, it was decided to excise out the complete growth from the tongue under the effect of xylazine sedation (0.1 mg kg^{-1} BW IM) and local infiltration of lignocaine (2%) in the edges of growth and in parenchymatous tissue of tongue. The growth was extirpated using a 11 No. scalpel and an electrocautery unit. The raw surfaces of wound were buried by suturing the wound edges with polyglactin 910-suture material using simple interrupted suture pattern. Smears from the nodules were made and fixed in alcohol for cytological examination. The smears were stained with Gams stain and Ziehl-Neelsen stain for acid-fast organisms. The nodules were fixed in 10% neutral buffered formalin and processed for routine histopathology (Luna, 1968).

On physical examination, cud dropping or bringing back prehended food, normal or food-tinged saliva drooling, poor body condition, swelling of submaxillary, parotid and pharyngo-laryngeal lymph nodes, presence of progressively growing mass on the dorsum of tongue without pain or hardness of tongue were noticed. Close examination revealed firm, raised, spherical and non-painful nodules of variable size (Fig. 1). Actinobacillosis is a frequently diagnosed disease of ruminants with most common glossal presentation, leading to starvation due to difficult prehension and swallowing. The disease was not clinically diagnosed to be Actinobacillosis; however, after histopathological confirmation the owner was advised to give strepto-penicillin (5g IM, twice daily for 5 days) and potassium iodide (5 g., PO twice for 15 days) and a multivitamin syrup 30 mL PO OD for 15 days.

Gram and Ziehl-Neelsen stainings were carried out on smears and tissue sections of lingual lesions revealed small Gram-negative coccobacilli and non-acid-fast organism (Fig. 4), respectively.

Grossly, progressively growing red colour cauliflower like growth of about 15 cm long on dorsum of tongue without pain or hardness of tongue was noticed (Fig. 1). In tongue, the ulcerative glossitis associated with pyogranulomatous reaction was seen as round masses in both superficial areas beneath the mucosa and deeper parts between striated muscles. Due to the difficulties in bacteriological diagnosis, histopathological examination of biopsies is usually helpful for the diagnosis of Actinobacillosis (Milne, *et al.*, 2001). Microscopic examination revealed pyogranulomatous inflammation and microabscesses. The masses contained many tiny microgranulomas with chronic active inflammatory lesions containing mixed populations of lymphocytes, plasma cells, macrophages and a few neutrophils surrounded by a dense fibrous connective tissue layers (Fig. 2). The granulomas contained centrally located actinobacilli rimmed by radiating eosinophilic club shapes or Splendore-Hoeppeli reaction (Fig. 3). Accordingly, a histological diagnosis of chronic pyogranulomatous inflammation caused by Actinobacillus bacteria (probably *A. lignieresii*) was reached. The histopathological changes observed in the tongue biopsy from affected cow were similar

Fig. 1: Raised spherical button sized nodules giving the appearance of granulation tissue

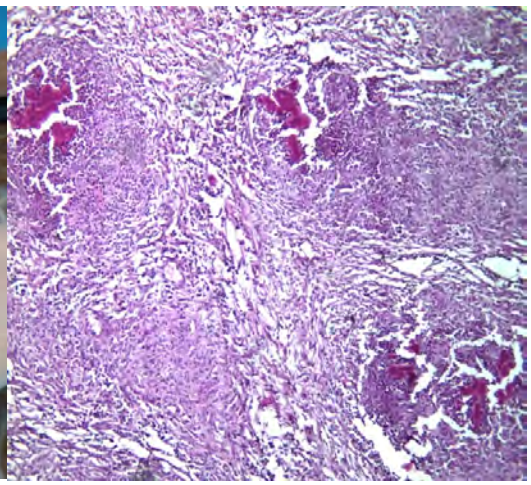

Fig. 2: Tongue showing multiple micropyogranulomas surrounded by neutrophils, mononuclear inflammatory cells and dense fibrous tissue. H&E, X100

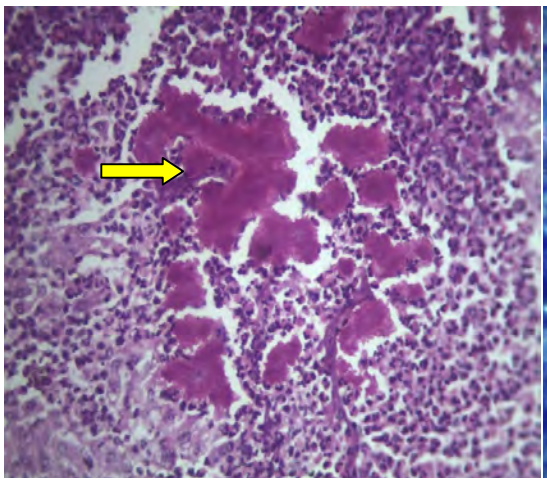

Fig.3: Granuloma with centrally located actinobacilli rimmed by radiating eosinophilic club shaped splendore-hoeppeli reaction (arrow) and chronic active inflammatory lesions. H&E, X400

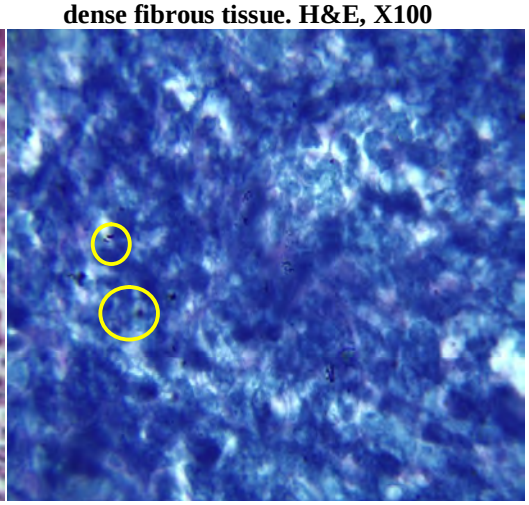

Fig. 4: Tissue section of lingual lesion showing the presence of non-acid-fast organism (circles). ZN, X1000.

similar to the described in previous reports. Lesions of actinobacillosis have a very distinctive pattern, reported as *Actinobacillus* granulomas, which consist of neutrophils and club-like rosettes with a central mass of Gram negative coccobacilli (Splendore-hoepelli phenomenon) surrounded by neutrophils, mononuclear cells and fibrosis (Radostits, *et al*. 2007; Hussein 2008; Angelo, *et al*. 2009; Taghipour-Bazargani *et al*., 2010).

To the authors of this article, skin insults due to skin abrasion with *A. lignieresii* contaminated surface were the most common situation for atypical actinobacillosis development in the cow. In apparent contrary to the other reports (Radostits, *et al.*, 2007; Smith 2009), in cow with affected tongue neither base nor sulcus lingualis (lingual fossa) were involved nor there was any indication of tongue hardness (woody tongue).

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