
ACTINOBACILLOSIS

Wooden tongue

Definition

- It is a chronic infectious disease of ruminants, caused by *actinobacillus ligniersi*, characterized by inflammation of soft tissue of the head especially tongue (localized firm swelling of dorsum), less commonly pharyngeal lymph nodes, facial skin, nares and esophageal groove. It is sporadic and self-limiting disease.

Etiology

- *Actinobacillus ligniersi* (normal commensal organism in the oral flora of the cattle),
 - Gram negative coccobacilli or pleomorphic rods,
 - grow on blood and serum containing media at 20-43°C and need increase in Co₂, sticky colonies, non-hemolytic on blood agar.
 - Most of strains grow on MacConkey agar,
 - form sulfur granules as white or yellow-white cheesy accumulation of the organism.

Predisposing factor:

- Oral mucosa injuries by fibrous feed materials or by foreign bodies and during oral manipulation by hand of owner or veterinarian

- **Animal susceptibility:** Cattle, buffaloes (mature and of dairy breed are more susceptible), sheep and goats.
- **Mode of infection:**
 - ***Source of infection:*** Pus or infected discharges are the main source of infection.
 - ***Mode of transmission:*** The disease is transmitted by ingestion of contaminated food and water with the presence of oral mucosa injury (wounds or abrasions).

Pathogenesis

- Local infection by the organism causes an acute inflammatory reaction in the tongue and the subsequent development of granulomatous lesions in which necrosis and suppuration occur, often with the discharge of pus to the exterior. Spread to regional lymph nodes is usual.
- Lingual involvement in cattle causes interference with prehension and mastication due to acute inflammation in the early stages and distortion of the tongue at a later stage.
- Visceral involvement is recorded.
- In sheep, there is suppurative infection around head, neck, skin, rumen, lung, mammary gland and tongue involvement is not typical.

Clinical signs

- Incubation period is unknown, morbidity and mortality rate is low and course of the disease is long
- The onset of glossal actinobacillosis is usually acute, the affected animal being unable to eat for a period of about 48 hours. There is excessive salivation and gentle chewing of the tongue
- On palpation the tongue is swollen and hard, particularly at the base, the tip often appearing to be normal
- Nodules and ulcers are present on the side of the tongue and there may be an ulcer at the anterior edge of the dorsum.
- In the later stages when the acute inflammation is replaced by fibrous tissue, the tongue becomes shrunken and immobile and there is considerable interference with prehension.

Clinical signs

- **Lymphadenitis** is common and is often independent of lesions in the tongue. There may be visible and palpable enlargement of the submaxillary and parotid nodes. Local, firm swellings develop and often rupture with the discharge of thin, non-odorous pus
- **Cutaneous actinobacillosis** is also recorded with actinobacillosis granulomas occurring on atypical but visible areas such as the external nares, cheeks, skin or eyelid, and hind limbs



Neck

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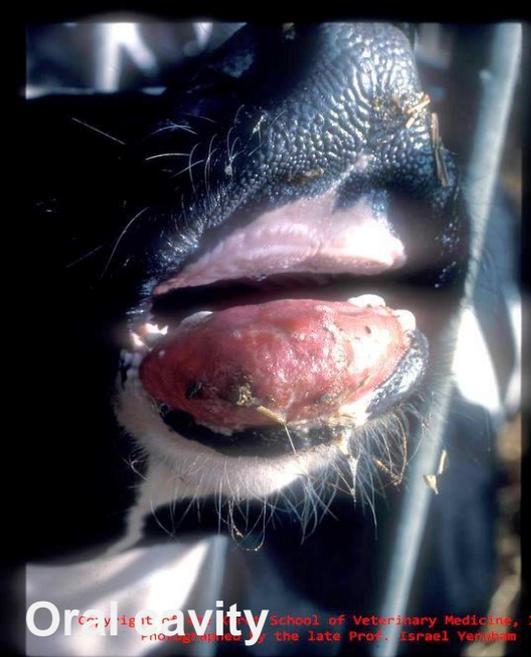
Leg

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Chest

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Oral cavity

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Udder

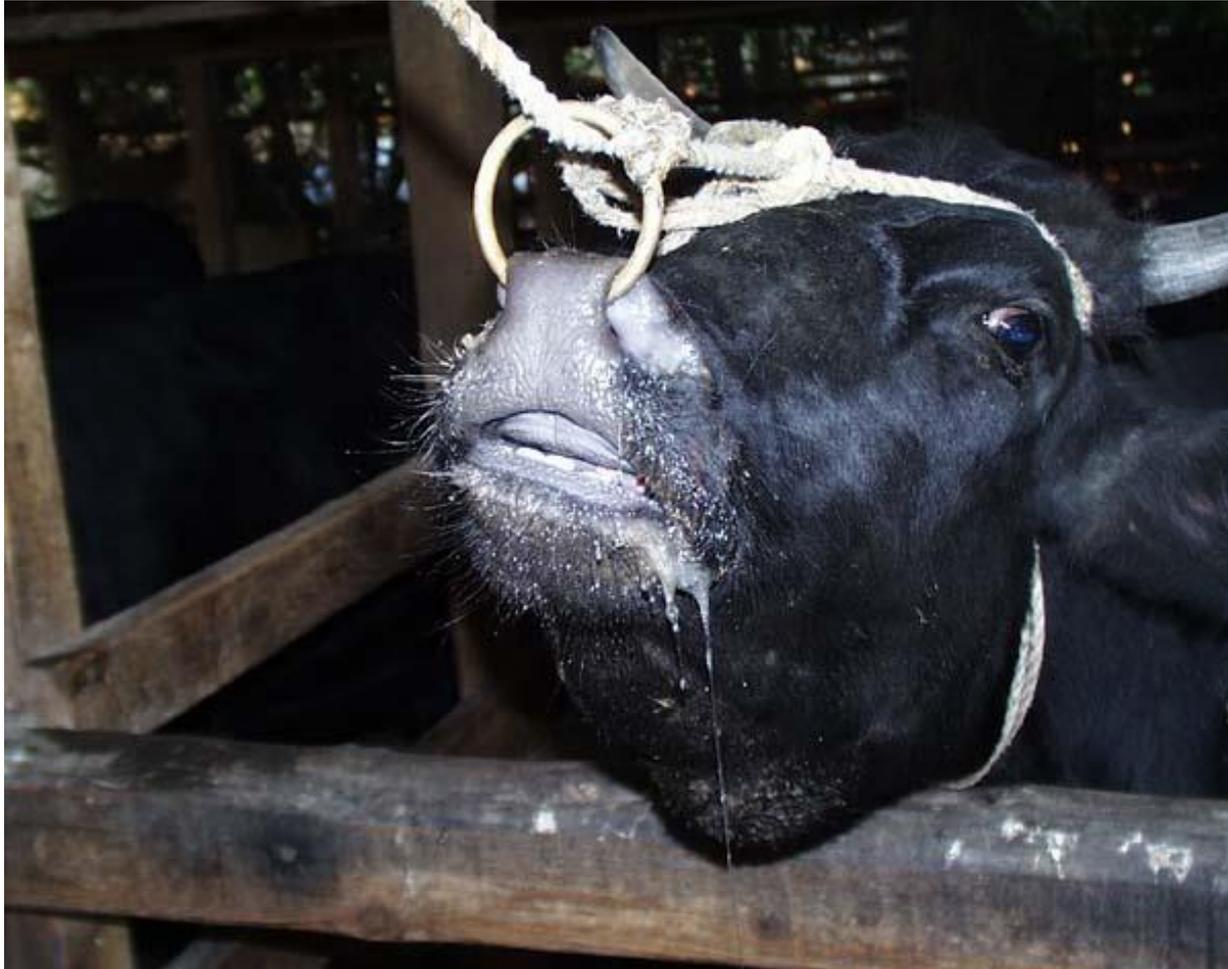
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Tongue

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bovine species affected with wooden tongue . there is submandibular swelling with profuse salivat



Actinobacillosis Variable sized, raised firm nodules and plaques on mid dorsal surface of the tongue.



actinobacillosis . bovine tongue dorsal surface . there is multiple granulomatus nodules within



actinobacillosis . bovine tongue dorsal and lateral surfaces . presence of multiple granulomatus

actinobacillosis . bovine tongue cut section . there is multiple granulomatus nodules within muscular tissue



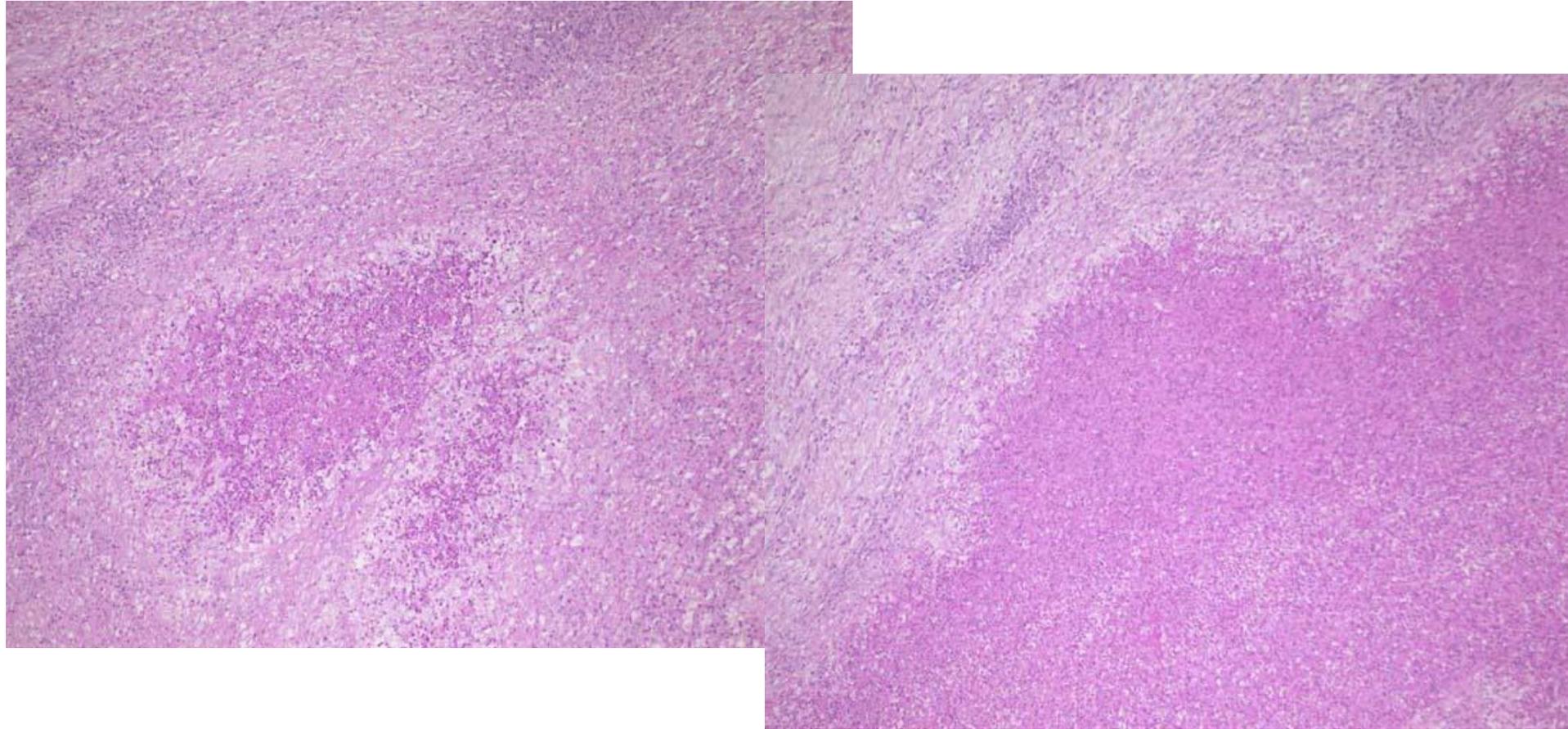
open mouth of bovine species affected with wooden tongue . there is multiple granulomatus nodule

actinobacillosis . multifocal well demarcated yellow lesions in the retropharyngeal lymph node of



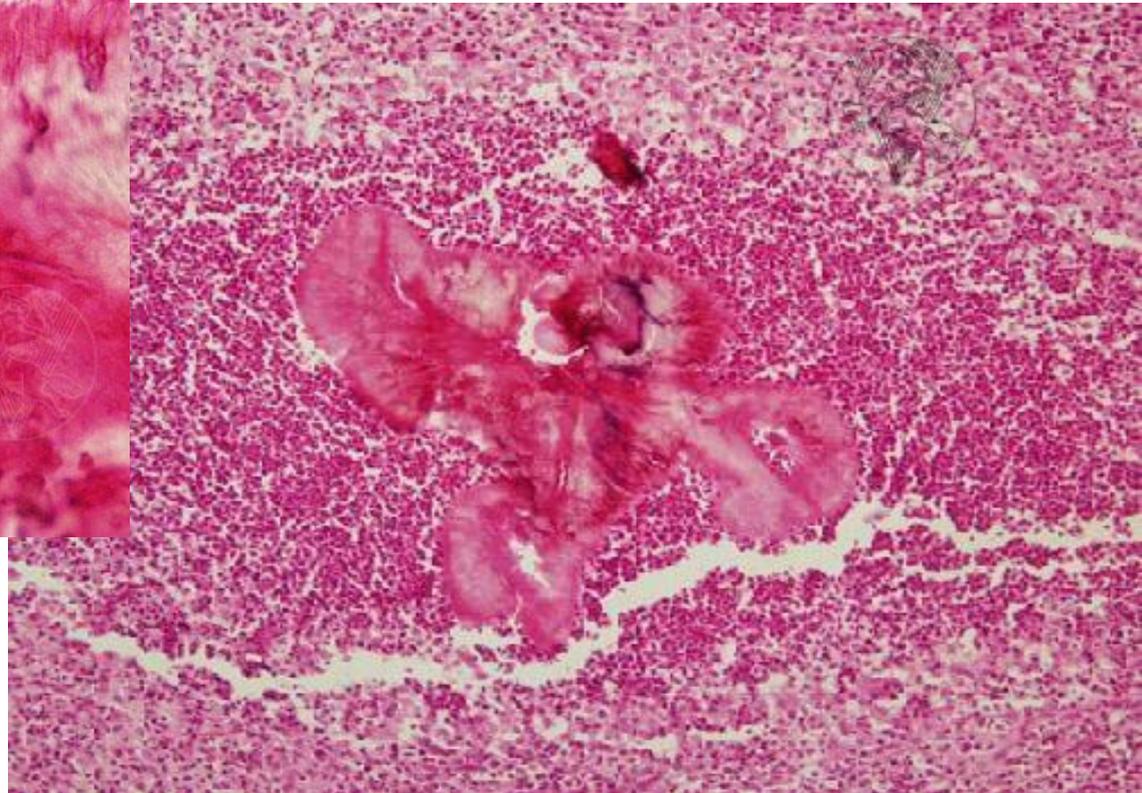
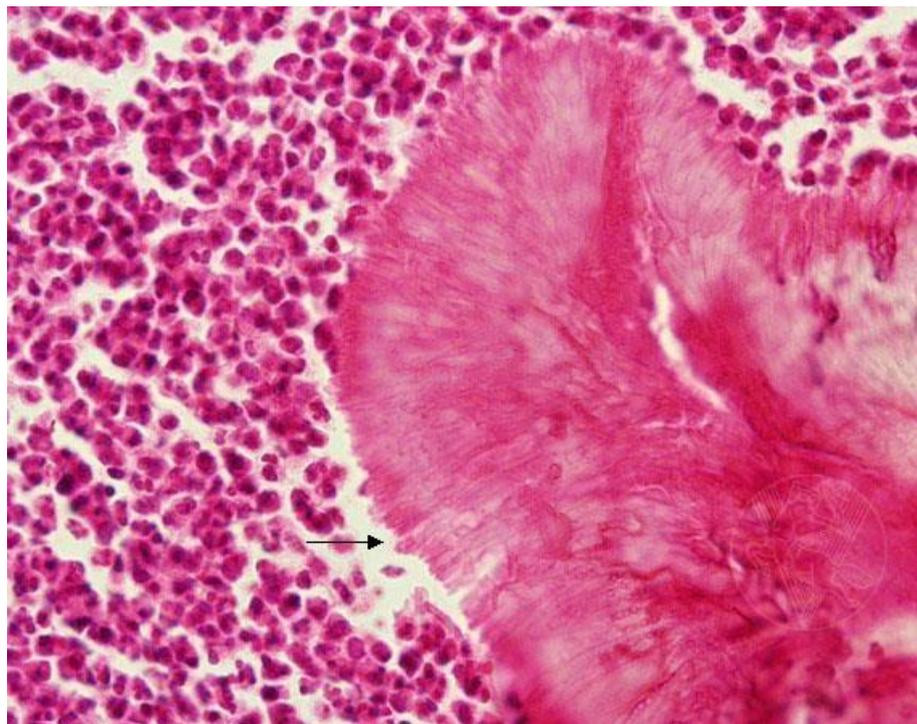
multiple cut sections in bovine species tongue . there is deposition of multiple abscess surrounded by area of inflammation

histological cut section in wooden tongue nodule. showing typical abscess in tongue muscles

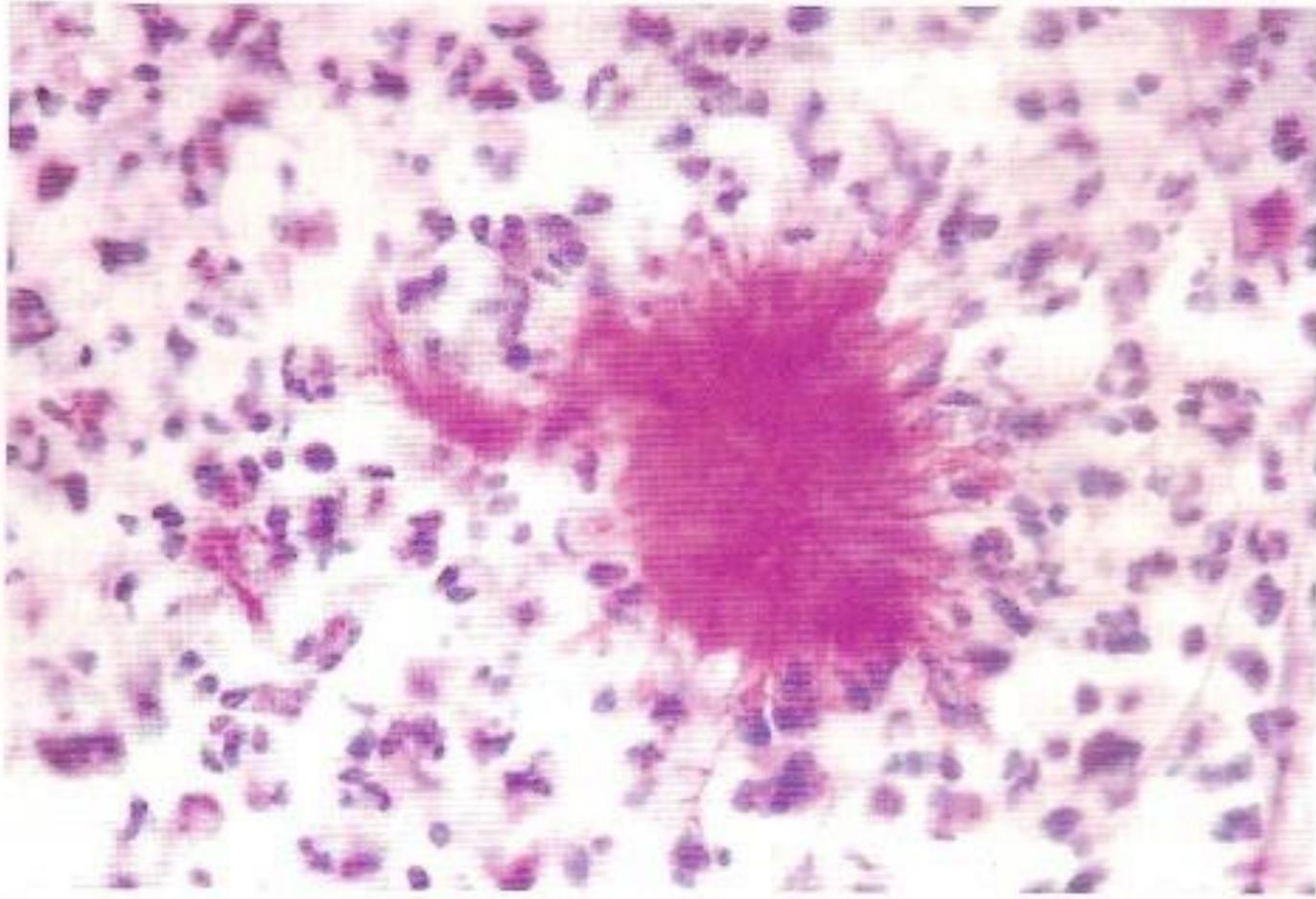


histological section of bovine species tongue showing fibrosis in tongue muscles

This is the typical microscopic appearance of an actinobacillosis granuloma. It consists in an eosinophilic central area, called sulphur granule, (formed by the pathogen and by immune complexes synthesized as a response to the infection) enclosed in a neutrophilic cellular atmosphere. Peripherally, several mononuclear cellular elements can be found, namely macrophages, plasmocytes and lymphocytes (H&E, 100x). This inflammatory response causes a fibroblastic reaction that progressively isolates the granuloma from the surrounding tissue.



Actinobacillosis (wooden tongue), tongue, cow.
Splendore-Hoeppli reaction (colony of bacteria with surrounding radiating "clubs") is surrounded by suppurative inflammation.
H&E stain.



Postmortem lesions

- The granulomatous lesion of tongue and visceral organs can be seen.

Differential diagnosis

- The disease may be confused with:
 - Actinomyces: It involves hard tissue and rarely soft one.
 - TB, especially with atypical form, differentiates on basis of tuberculin test.
 - Abscess of throat region, contain single cavity and discharge thin pus and readily heal after drainage