

## **Bovine actinomycosis**

**Synonym:** lumpy jaw

**Etiology:** *Actinomyces bovis*

This is a non-contagious disease caused by the entrance into the animal tissues a Gram-positive bacteria, which tend to grow slowly and produce branching filaments. Because of filament formation and granulomatous responses to tissue invasion, these organisms were originally regarded as fungi are found on hay, alfalfa, fodder, grain, etc.

### **Transmission:**

Small wounds in the lining membrane of the mouth or tongue: or decayed teeth permit the fungus to get into the tissues. Sometimes the fungus is inhaled, lodging in the lungs. It may lodge in castration or other wounds, or it may pass into the udder through the milk ducts. It produces its characteristic symptoms in those parts in which it becomes lodged.

Cattle are most frequently infected, especially in the region of the head; swine are commonly infected in the udder, while the disease is quite rare in horses, sheep, goats, dogs, or man.

### **Clinical findings:**

- ✓ A bony enlargement over the mandible or maxilla.
- ✓ These abscesses eventually rupture, discharging thick, clear, yellow pus containing small yellow-white sulfur granules.
- ✓ Emaciation and death eventually result because of the animal's inability to eat.
- ✓ Actinomycosis of the lungs is comparatively rare. The animal shows no characteristic symptoms to distinguish it from any other lung trouble. There is usually in the advanced stage difficult breathing, coughing, and the animal loses flesh.
- ✓ The udder, when infected, becomes either uniformly hardened and may be enlarged, or small, round, hard masses may be felt in the interior. These latter are usually filled with thick pus.

### **Pathogenesis:**

Invasion of the mandible and, less commonly, the maxilla of cattle by *A. bovis* causes a chronic rarefying osteomyelitis. The organism is presumed to invade the tissues following trauma to the mucosa from rough feed or through dental alveoli during tooth eruption. A painless swelling of the affected bone enlarges over a period of several weeks. The swelling becomes painful and fistulous tracts, discharging purulent exudates, develop. Spread to adjacent soft tissues may occur but there is minimal involvement of regional lymph nodes

## **Diagnosis**

- Clinical signs are often distinctive in advanced cases.
- Gram-stained smears may reveal morphological forms typical of the aetiological agent
- Radiography can be used to determine the degree of bone destruction.
- Histopathological examination of specimens from lesions caused by *A. bovis* reveals aggregates of filamentous organisms surrounded by eosinophilic club shaped structures
  - Lumpy jaw should be distinguished from other conditions which result in swelling of the bones of the jaw and from actinobacillosis which may involve the soft tissues of the head.

## **D.D:**

- **Grass seed abscesses**

Abscesses caused by grass seeds, especially barley grass, are the most common conditions that might be mistaken for lumpy jaw. They can appear as a lump or lumps around the face but rarely occur in the bone. They are usually in the soft tissues and thus can be moved around. They can also usually be cured.

- **Woody tongue**

The cause of woody tongue is similar to lumpy jaw in that the surface of the tongue has to be damaged first, allowing invasion by a bacterium closely related to *A. bovis*, the cause of lumpy jaw. The two conditions differ firstly in that in woody tongue it is only the tongue that is affected, and secondly, woody tongue is more easily cured.

- **"Bottle jaw"**

Bottle jaw is a soft swelling of the tissues underneath the jaw, which, depending on the cause, can respond if treated correctly. It may be caused by parasites such as worms or liver fluke, and also may be seen in cases of malnutrition, Johnes disease, anaemia, and heart failure.

- **Cancer**

Tumours of the bones of the skull do occur but are rare.

- **Foreign bodies**

Foreign bodies such as sticks and bones, trapped in the mouth, may cause conditions which bear a superficial resemblance to lumpy jaw. Early, close inspection can prevent a lot of long term harm

**Treatment:**

In animals with advanced lesions, treatment is disappointing. Recurrence is common.

- (1) Early treatment consists of sodium iodide (1 g/12 kg body weight given IV once and repeated in 14 days).
- (2) Penicillin (22,000 IU/kg IM twice daily for 7 days) is effective if used before bony lesions develop.
- (3) Surgical removal of the lesion when it is not firmly adherent to surrounding parts, or where it has not infiltrated neighboring structures.
- (4) Washed out daily with a 2 %, watery solution of carbolic acid.
- (5) When the growth cannot be totally removed, it may be cut open, the pus washed out with a 2 % solution of carbolic acid and water, and the wound packed with a piece of gauze that has been saturated with tincture of iodine. The gauze may be left in position for 24-48 hrs.

**Prevention**

- ⇒ When large numbers of animals in a herd are affected it is advisable, if possible, to keep them away from low, swampy soil as grazing ground. A change of feed is desirable; or the same feed may be used if it is first steamed or scalded.
- ⇒ Animals of all species affected with either disease should not be permitted to remain in pastures or feed lots with healthy cattle. This will prevent pus from open lesions from contaminating food, water, bedding, or cuts and abrasions in non-infected animals.