University of Mosul
Lecture No.: 9
College of Veterinary Medicine
Date: 2024-2025
Unit of Scientific Affairs
Website:

Lecture title: Infectious Bovine Keratoconjunctivitis

Lecturer Affiliation: ***Khder J. Hussain Altaee,*** *BVMS, MSc, PhD*
Assist Prof , Department of Internal and Preventive Medicine

Summary:

INFECTIOUS BOVINE KERATOCONJUNCTIVITIS

1.**Introduction**

1.1. **Synonyms**:

- Infectious Bovine Keratoconjunctivitis (IBK), Pinkeye, Infectious ophthalmia, New forest eye Blight or التهاب القرنية والملتحمة المعدي في الماشية

1.2. Definition: IBK is an acute non-fatal, infectious disease of cattle and buffalo, occasionally sheep and other animals, caused by *Morexella bovis* and characterized by keratitis, conjunctivitis, blepharitis, lacrimation and development of central corneal edema and a white spot.

ع

II. Etiology

- *Morexella bovis* (*Mor. bovis*) may be found as a commensal on the conjunctiva or in the nasopharynx of cattle. Other agents incriminated in severe keratitis are rickettsiae, chlamydia. mycoplasma, acholeplasma, theileiza and some viruses such as IBR virus.
- **Morphology and staining**: *Mor. bovis*, is a Gram negative coccobacillus, usually occurring in pair. It is non motile, non spore forming and encapsulated.
- Beta-hemolysin, pili, leukotoxin, and proteases are virulence factors of the bacterium.

III.Epidemiology

III.1 Distribution: IBK has been reported worldwide wherever cattle are raised. The disease has been recorded in Iraq

III.2. **Transmission and mode of infection**:

A. The source of infection is usually ocular and nasal discharges of diseased or carrier animals (cattle over 2 years of age).

B. Transmission of *M. bovis* from animal to animal may be by direct contact with Infectious ocular and nasal discharges, or indirectly by mechanical vectors such as flies (especially flies of the Musca and Stomoxy species).

III.3. Susceptible hosts:

In addition to cattle and buffalo, natural infection occasionally occurs in sheep, goats and horses.

III.4. Factors influencing susceptibility:

A. Calves and cattle of less than 2 years are highly susceptible. Older animals have most likely developed acquired surface immunity (protective antibodies on the eye surface).

B. The disease is more common during the summer and autumn months.

C. Several factors predispose cattle to pinkeye such as:

- Any factor increasing eye irritation for example, flies,
- Ultraviolet radiation from bright sunlight may sensitize and irritate the eye.

IV.Pathogenesis

- After infection, *M. bovis* attaches to the corneal epithelium by pili, produce a haemolysin, , and a cytotoxin that damages bovine neutrophils, causing an inflammatory reaction which results in comeal ulcers with deeper stromal involvement, corneal edema and corneal neovascularization. The lesions are localized in the eye and there is no systemic infection.

V. Clinical signs

A. The IP is usually short (about 2 days). The morbidity rate is high, and the fatality rate is low. Recovery occurs after a clinical course of 3-4 weeks.

B. The start of the disease is recognized by a profuse flow of tears (usually affecting only one eye at first), inflammation of the conjunctiva and the swelling of the eyelids.

- After 2-3 days, the animal becomes sensitive to light, the cornea becomes cloudy and the third eyelid becomes visible, the discharge from the eyes becomes muco- purulent and blood vessels develop across the clear cornea from the side of the eye.
- This progresses until vascular tissue has covered the entire comes, producing the so called "**Pink eye**".
- The normal shape of the cornea changes, becoming pointed or conical during the course of the disease.

- In bad cases, a mass of pink tissue may developed on the surface, and blindness can occur in such cases

VI. Postmortem lesion

- The lesions are confined to the eye, hyperemia, edema, suppuration and necrosis, as evidenced by ulcers in the conjunctiva and eyeball.

VII. Diagnosis

VII.1. Field diagnosis: The clinical signs and high morbidity in addition to the rapid spread through the herd allow an accurate field diagnosis.

VII.2, Laboratory diagnosis:

- Specimens for laboratory use:
  Swabs of the conjunctival sac are immediately inoculated into blood agar.
- Laboratory diagnosis depends on isolation and identification as well as sensitivity of the Cultured organisms

VIl.3.Differential diagnosis:

IBK should be differentiated from:

A. Conjunctivitis and keratitis caused by other infectious agents such as IBR, BMC, RP, BVD-MD complex and *Pasteurella multocida* (capsular type A). All of these diseases have other obvious signs

B. *Mycoplasma bovis* has been isolated from the eyes of steers with outbreaks of severe conjunctivitis with corneal opacity and ulceration. Involvement of the eyelids with marked swelling was prominent

C. Theleziasis or eyeworm a number of nematode of genus Thelazia occur in the conjunctivial sac and tear ducts of mammals throughout the world. Infection may Cause excessive lacrimation, photophobia conjunctivals, keratitis, comeal ulceration and abscess formation on the eyelid. The disease is more common in summer and autumn in cattle and horses, Ivermectin is active against the adult worm in cattle.

D. Traumatic conjunctivitis, which is characterized by the presence of foreign matter in the eye or evidence of a physical injury.

VIII. Prognosis

Spontaneous recovery usually occurs (Self-Limiting). So, IBK has a good prognosis,

IX. Treatment

A. in general affected cattle should be placed in a dark shelter out of direct sunlight. Adequate vitamin A should be provided, especially during dry times.

B. Ideal therapy would include frequent application of ophthalmic ointments and solutions containing antibiotics, such as oxytetracycline, chloramphenicol, penicilin, ampicillin, or gentamcin three time daily.

C. When coneal vascularization is extensive, the subconjunctival injection of a mixture of corticosteroid and antibiotic is indicated to promote healing and more rapid local absorption and distribution of the drug. Dexamethasone 1mg with 2 ml of a mixture of penicillin and streptomycin or ampicillin may be used .

D. Sometimes, treatment of affected animals by iv injection of sulfadimidine at 100 mg/ kg bw or i/m injection of long acting oxytetracycline at a dose of 20 mg/kg bw will be effective in treating Pinkeya. A repeated dose after 72 hours may be necessary.

E. The use of topical ophthalmic anesthetics combined with 1-4% atropine sulfate solution twice daily may also be recommended to minimize ciliary spasm and pain

X .Prevention and control

- Depends on isolation and treatment of any cattle that show excessive lacrimation and blepharospasm.
- Killed whole cell vaccines are available .
- Fly control to reduce the vectors of the disease is always indicated.