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Lecture title: Bluetongue

Sore Muzzle, Pseudo Foot and-Mouth Disease, Muzzle Disease

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Summary: The bluetongue virus has recently expanded its geographic range. Before 1998, this virus rarely occurred in Europe; however, some serotypes are now regularly found in southern European countries and may be enzootic in this region. In 2006, a serotype 8 virus, which may have come from Africa, caused outbreaks in Germany, Belgium and the Netherlands. Due to the adaptability of its vector, Culicoides dewulfi, to European weather conditions, the latter virus has the potential to expand geographically in northern Europe.

Bluetongue is an insect-borne viral disease of ruminants. Among domestic animals, clinical disease occurs most often in sheep, and can result in significant morbidity. Affected sheep may have erosions and ulcerations on the mucous membranes, dyspnea, or lameness from muscle necrosis and inflammation of the coronary band. Some sheep may slough their hooves, and surviving animals can lose part or all of their wool. Some strains of the virus can result in mortality rates as high as 70% in highly susceptible sheep.

Transmission Bluetongue virus is transmitted by biting midges in the genus Culicoides.

- Ticks or sheep keds can be mechanical vectors but are probably of minor importance in disease transmission.
- Cattle are the major amplifying host due to their prolonged viremia and the feeding preferences of many Culicoides species.
- Bluetongue is not a contagious disease; however, the virus can be spread mechanically on surgical equipment and needles.
- Bluetongue virus can be found in semen and venereal transmission from bulls is possible, but does not appear to be a major route of infection.

Morbidity and Mortality

In sheep, the severity of disease varies with the breed of sheep, virus strain and environmental stresses.

The morbidity rate can be as high as 100% in this species. The mortality rate is usually 0-30%, but can be up to 70% in highly susceptible sheep. Similar morbidity and mortality rates are seen in bighorn sheep. Bluetongue is usually severe in whitetail deer and pronghorn antelope, with a morbidity rate as high as 100% and a mortality rate of 80-90%. Most infections in cattle, goats and North American elk are asymptomatic. In cattle, up to 5% of the animals may become ill, but deaths are rare. In some animals, lameness and poor condition can persist for some time.

Clinical Signs

- Bluetongue The vast majority of infections with bluetongue are clinically inapparent.
- In a percentage of infected sheep and occasionally other ruminants, more severe disease can occur.
- In sheep, the clinical signs may include fever, excessive salivation, depression, dyspnea and panting. Initially, animals have a clear nasal discharge; later, the discharge becomes mucopurulent and dries to a crust around the nostrils.
- The muzzle, lips and ears are hyperemic, and the lips and tongue may be very swollen.
- The tongue is occasionally cyanotic and protrudes from the mouth.
- The head and ears may also be edematous.
- Erosions and ulcerations are often found in the mouth; these lesions may become extensive and the mucous membranes may become necrotic and slough. The coronary bands on the hooves are often hyperemic and the hooves painful; lameness is common and animals may slough their hooves if they are driven.
- Pregnant ewes may abort their fetuses, or give birth to “dummy” lambs.
- Additional clinical signs can include torticollis, vomiting, pneumonia or conjunctivitis.

- The death rate varies with the strain of virus. Three or four weeks after recovery, some surviving sheep can lose some or all of their wool.
- Infections in cattle are usually subclinical; often, the only signs of disease are changes in the leukocyte count and a fluctuation in rectal temperature.
- Rarely, cattle have mild hyperemia, vesicles or ulcers in the mouth; hyperemia around the coronary band; hyperesthesia; or a vesicular and ulcerative dermatitis.
- The skin may develop thick folds, particularly in the cervical region.
- The external nares may contain erosions and a crusty exudate.
- Temporary sterility may be seen in bulls.
- Infected cows can give birth to calves with hydranencephaly or cerebral cysts.
- Cattle that have clinically apparent disease may develop severe breaks in the hooves several weeks after infection; such breaks are usually followed by foot rot.
- Infections in goats are usually subclinical, and similar to disease in cattle
- . Although many infections in wild ruminants are inapparent, severe disease can occur in some species. In pronghorn antelope and whitetail deer, the most common symptoms are hemorrhages and sudden death.

Diagnosis

1. Typical clinical signs are seen during seasons when insects are active.
2. A recent history of wasting and foot rot in the herd supports the diagnosis.
3. Laboratory tests Bluetongue can be diagnosed by isolating the virus in embryonated chicken eggs or cell cultures. Isolation in embryonated eggs is more sensitive than isolation in cell culture.

Differential diagnosis :

1. Foot-and-mouth disease.
2. Vesicular stomatitis.
3. Peste des petits ruminants.

4. plant photosensitization.
5. Malignant catarrhal fever and bovine virus diarrhea.

Control:

1. Bluetongue is transmitted by insect vectors and is not contagious by casual contact.
2. Disinfectants cannot prevent the virus from being transmitted between animals; however, where disinfection is warranted, sodium hypochlorite or 3% sodium hydroxide are effective.
3. Insect control is important in limiting the spread of the disease; synthetic pyrethroids or organophosphates are effective against Culicoides.
4. Moving animals into barns in the evening can also reduce the risk of infection. Although the bluetongue virus does not infect equids, horses and stables should be considered in any control scheme, as Culicoides can feed on horses, and manure piles are ideal breeding sites for these vectors.
5. In countries where bluetongue is endemic, vaccines are also used for control. Attenuated vaccines, which are available in countries including the U.S., are generally serotype specific. Multivalent live vaccines are also sold in South Africa. During the vector season, the viruses in attenuated vaccines can be transmitted to unvaccinated animals, and could reassort with field strains, resulting in new viral strains. In addition, vaccines can cause fetal malformations in pregnant ewes.