Veterinary Today
Vol.1 Issue 5 May, 2023
Pages:55-56

An update on Bluetongue (BT)

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Introduction

Bluetongue is a non contagious arthropod-borne illness that affects domestic and wild ruminants. It is spread by Culicoides biting midges and is brought on by a virus from the Orbivirus genus of the Reoviridae family. This illness is a major socioeconomic concern and has a substantial impact on the commerce of animals and animal products internationally. The bluetongue viruses show stability and resilience to numerous common virucidal treatments, like sodium carbonate, as well as disintegration. They are, however, sensitive to acidity and become inactive when exposed to a pH below 6.0. Additionally, they are sensitive to organic iodides and 3% sodium hydroxide solution. BTV is widespread around the world in both tropical and temperate climates, where it is spread by several species of Culicoides midge vectors, creating separate global "episystems." Although clinical sickness primarily affects sheep and particular wildlife species, it can occasionally infect other ruminants like cattle. As amplifying reservoir hosts for the bluetongue virus (BTV), cattle are particularly important.

Method of Transmission

The disease is not physiologically infectious and is nearly entirely spread by particular species of Culicoides.

Risk factors

As Culicoides require warmth and moisture to breed and prefer quiet, warm, and humid circumstances for eating, climate plays a key role in their biology. The population of vectors can be significantly reduced by a cold winter or a dry summer, which lowers the danger of disease. While some BTV strains, such as serotype 8, can cause severe clinical sickness in cattle, most other highly pathogenic BTV strain infections often stay subclinical or only cause moderate clinical signs in this particular species. Cattle are known to be the reservoir and amplifying host as a result of their high viremia levels.

Clinical signs

There are various symptoms included in the clinical presentations. Fever, mucopurulent nasal discharge, appetite loss, excessive salivation, as well as swelling and edoema of the lips, gums, dental pad, and tongue are some of these symptoms. There may occasionally be an uncontrollable movement of the lips and offensive breath. It is usual to see hyperemia and ulceration at the corners of the lips, on the buccal papillae, and around the anus and vulva in addition to lenticular necrotic ulcers, which are most noticeable on the lateral portions of the tongue. In severe cases, the throat may expand noticeably, the head and neck may extend, the body temperature may rise, the cough may be easily elicited by laryngeal palpation, breathing may be difficult, and aspiration pneumonia may be a possibility. Dysentery and diarrhoea might also happen. Coronitis manifests as the appearance of a dark red to purple band in the skin right above the coronet, which is a key diagnostic indication. Additionally, the general health of the impacted animals is rapidly and noticeably declining. There may also be facial edoema, significant ear drooping, and hyperemia of the non-wooled skin. Sheep may exhibit acute conjunctivitis and extensive weeping in extreme cases. Additionally, the fleece's staple may have broken. Death usually occurs six days following the onset of symptoms in the majority of fatal cases.

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Treatment

There is no known cure for bluetongue at this time. However, symptomatic and supportive therapy should be provided in order to lessen symptoms. Local irrigations with mild disinfectant treatments could provide relief. Sheep with illnesses must be protected from inclement weather, especially direct sunlight, in covered areas. Fluid and electrolyte management should be taken into account, and it may be necessary to take precautions to avoid subsequent infections.

Prevention and control

Both inactivated and live attenuated (modified live) BTV vaccinations can be used to prevent and control bluetongue (BT). It is significant to remember that minimal cross-protection exists across various BTV serotypes. Animals should therefore receive vaccinations against each serotype of the virus found in that area. To prevent any potential teratogenic consequences, vaccination should be given at least two weeks before breeding season. To prevent vector infection and reduce the probability of recombination between vaccine and field viruses, vaccination should also take place before the seasonal window of virus transmission (late summer and autumn).

Conclusion

Arthropods can spread the viral illness bluetongue, which mostly affects ruminants, especially sheep. The strain and serotype of the virus, the species, breed, and age of the affected animal are all variables that affect the severity of bluetongue. Clinical manifestations can range from undetected to deadly results. By analysing clinical symptoms, post-mortem results, and performing an epidemiological analysis, a provisional diagnosis can be determined. However, to confirm the diagnosis, laboratory testing is required. There isn't a specific bluetongue treatment available right now for animals. Animal movement limitations should be implemented right away in order to prevent and control the sickness. After that, domestic ruminant farms should be monitored, including by performing clinical exams as well as serological and virological tests. In addition, insect vector monitoring is necessary, and prophylactic immunisation can be used as a preventive approach. It is significant to highlight that BTV's global distribution is constantly shifting, possibly acting as a precursor to future effects of climate change on certain arboviral diseases. Although not all illnesses fall into this group, orbiviruses in particular may be in the vanguard of new arboviral diseases brought on by climate change and other factors.