Clostridial Disease

Clostridia are widespread organisms, found particularly in the soil and other organic material. Disease arises when there is tissue damage, activating latent spores resulting in rapid multiplication of the organism and the production of toxins. Death normally occurs within hours of first infection and the response to antibiotic therapy is generally disappointing. When there is a history of clostridial disease on a farm, vaccination is essential to prevent unnecessary losses.

The most frequently seen clostridial diseases in cattle are

1. **Tetanus**
   Caused by *C. tetani* which produces a powerful toxin that attacks the nervous system. It commonly follows puncture wounds or infection of the castration site after castration with a rubber ring or contamination of the surgical site.
   Clinical signs include
   - hind limb stiffness with stilted gait and raised tailhead
   - anxious, startled expression with bulging eyes, ears held back towards poll and flared nostrils
   - lock jaw
   - moderate bloat.
   There is progression over the course of 2-5 days leading to recumbency and seizures before death occurs due to respiratory failure.

2. **Blackleg/Blackquarter**
   Caused by *C. chauvoei*. The clostridial spores enter the body through skin wounds and can be introduced by contaminated needles or injection equipment. Muscle trauma, e.g. due to bulling activity or from injuries at congested feed barriers, trigger the multiplication of the organism with associated toxin production leading to disease. Cases can increase on turnout or movement to new pastures.

   ![Post mortem sample of muscle tissue affected by blackleg](image)

   Although animals can be found dead, they will often present as very dull and depressed, being disinclined to feed and have a very high temperature. If there is involvement of one limb, the animal will present with acute, severe lameness. The only treatment option is high doses of penicillin although this is often unsuccessful.

3. **Black disease (Infectious necrotic hepatitis)**
   Caused by *C. novyi* and frequently associated with the migration of immature liver fluke during late summer/early autumn. There are few clinical signs of note as affected animals are generally found dead. Appropriate fluke control combined with vaccination is the only means of control.

Idiopathic tetanus can also occur when conditions arise in the forestomach to allow the small number of *C. tetani* normally present to multiply and produce sufficient toxin to cause disease. Outbreaks have been associated with feeding of root crops heavily contaminated with soil. It is usually characterised by bloat and less severe clinical signs and tends to respond better to supportive therapy.

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4. Malignant oedema
This is a condition caused by a number of different clostridia including *C. novyi* type B, *C. septicum* and *C. chauvoei*. It occurs generally as a result of the use of contaminated injection equipment causing local tissue necrosis that activates latent spores. The result is extensive oedema at the site of the injection causing swelling, pain and severe lameness. Affected cattle generally die within 1-2 days and treatment is rarely effective.

5. Botulism
Caused by ingestion of the pre-formed toxins of *C. botulinum* and is often associated with
- poultry litter spread onto pasture
- feeding ensiled poultry manure and bakery waste
- bird carcasses in silage clamps.

Similar to tetanus, botulism primarily affects the nervous system. In contrast to the spastic paralysis of tetanus, botulism causes flaccid paralysis; initially of the hindlimbs but progressing to involve the forelegs, head and neck. Affected cattle then have difficulty chewing and swallowing, and the tongue is paralysed.

If not euthanased at this point, death will eventually occur due to the involvement of the respiratory muscles and diaphragm. Some individuals may recover over the course of 14-21 days. There is no effective treatment and no vaccine available and so control is focused on avoiding contact of cattle with potentially infected pastures.

Ischaemic Teat Necrosis
Hayley Crosby, a vet at the University of Liverpool, is embarking upon research into a new and emerging disease in dairy cattle, Ischaemic Teat Necrosis (ITN). The cause of the disease, how much disease is present in Great Britain and the risk factors associated with the disease are all unknown. Worryingly, there are anecdotal reports of herds with up to 20% of heifers affected and there are no known effective treatments. ITN presents as a dry, dark red to black area on the skin at the base of the teat (see photos 1 and 2) that may extend down the teat towards the teat end and/or up on to the skin of the udder.

These lesions are highly irritable to the cow and can cause her to constantly lick her teats until she has removed them (see photo 3). Once the teats have been lost the cow is often culled on welfare grounds. The lesion appears to be mostly confined to the skin and does not directly cause mastitis. Mastitis may however occur due to an inability to milk the quarter and secondary infection (see photo 3).

As the cause of bovine ITN is currently unknown, research into this disease is essential. AHDB Dairy are funding work at the University of Liverpool in an attempt to find some answers. To do this we need your help.

We are keen to hear from anyone with experience of the disease no matter how small the information. Please contact Hayley on +44(0)7765456529 or via email hcroby@liverpool.ac.uk. For updates and further information please go to www.liverpool.ac.uk/BovineITN.

“Stock for Sale” 2 x 18month old Beef Shorthorn Bulls. Both Shown and Prize winners this season. Ready for work, both tested negative for BVD & IBR. Progeny eligible for Morrison’s Premium Scheme. Telephone Fran on 07774 416534.

Regards, **Cathy Morris**