

Bovine Trichomoniasis

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Trichomoniasis is a venereal disease of cattle which can cause infertility through early embryonic death and abortion. The disease is caused by a protozoan parasite, *Tritrichomonas foetus*. The organisms which cause the disease are found in the genital tracts of cattle with transmission occurring during mating. The disease can also be spread, to a lesser extent, by contaminated equipment used for calving or artificial insemination (AI), or if contaminated semen is used for AI.

Bovine trichomoniasis is an uncommon disease in NSW and the other states of southern Australia. However, the disease is endemic to northern Australia where a significant proportion of bulls may be infected.

Clinical Signs

Trichomoniasis has an insidious onset in a herd. The first sign of a problem may be an extended calving season with a greater number of cows calving late in the season. The pattern of the disease will depend on how many bulls are in use and the proportion of bulls that are infected.

If pregnancy testing is carried out routinely, a reduced pregnancy rate may provide the first indications of a problem. Typical pregnancy rates in affected herds in Australia may be from 60–80 per cent, depending on the duration of the mating period. More devastating losses than these have been reported overseas. Pregnancy rates are usually substantially reduced in small herds where only one or two bulls are used. In larger herds, where only one or a few of the bulls may be infected, the effect may be less severe. If a herd has been infected for some time, the disease pattern may be less obvious and the disease may remain undetected, particularly if the bulls are left in all year-round.

Embryonic death usually occurs shortly after conception, in which case, the cow simply absorbs the dead embryo and comes back on heat. It may

therefore appear to an observer that an affected cow is simply having long cycles. If the affected embryo survives longer, abortion may occur, but usually before five months of gestation. These early abortions may also remain undetected with the apparent problem diagnosed as herd infertility. In 5–10 per cent of cases, abortion does not occur and the foetus degenerates in the uterus which may then become filled with pus (pyometron).

In recently-infected herds, 5–30 per cent of cows can show clinical signs of the condition. These signs may include a mucopurulent (containing pus) discharge and inflammation of the vagina, cervix and uterus.

A discharge usually occurs more commonly with this disease than with other venereal diseases such as vibriosis. However, the discharge is often slight and can therefore be easily overlooked.

Carrier State

A carrier state of the disease exists in both cows and bulls. Carrier bulls show no outward signs of the disease, with the organism establishing itself in microscopic folds of the skin that lines a bull's penis and the lining of the sheath. Older bulls, in particular, with their wrinkly penises can harbour large numbers of parasites, and are more likely to be infected than younger bulls. Nevertheless, all infected bulls should be considered permanent carriers of the disease, since the bull's immune system seems unable to rid bulls of the infection once it has become established.

In contrast, infected cows usually recover without treatment within about 3–5 heat cycles after an abortion. If bulls are still running with them, they will then conceive and calve normally. However, immunity in females following infection is short-lived and re-infection may occur after a few weeks if cows are re-exposed to an infected bull. If previously infected females are reinfected in the next breeding season, they can abort again.

Cows can occasionally remain infected throughout pregnancy and then calve normally. These cows can remain a source of infection for clean bulls introduced in the next breeding season. Contact between recently-calved cows and new, clean bulls

should, therefore, be avoided when attempting to eradicate the disease.

Diagnosis of Trichomoniasis

The possibility of trichomoniasis should always be considered in a comprehensive investigation of a herd fertility problem.

Abortions due to trichomoniasis infection occur quite early and may not be noticed. It is more likely that the producer will simply notice cows returning to service.

Several other diseases can also cause a reduction in pregnancy rates, extended calving patterns, and decreased calving rates. In NSW, diseases such as vibriosis (campylobacteriosis), pestivirus, leptospirosis neosporosis and theileria are more likely causes of infertility and/or abortion than trichomoniasis. These other causes of reproductive loss need to be ruled out by appropriate testing.

Cattle do not usually develop circulating antibodies to the trichomonad parasite, possibly because *T. foetus* does not actually penetrate adult tissues (although it may invade the placenta and the foetus). Because of this, no effective blood test can be developed.

To confirm a diagnosis of trichomoniasis, specimens need to be collected from bulls, preferably after at least two weeks sexual rest, as this allows the number of organisms (if present) to build-up in the prepuce, thereby increasing the chance of detection. Cows that have been pregnancy-tested as empty, are known to have aborted, or have a uterine discharge, should also be sampled.

Samples should be taken using a long pipette attached to a 20 ml syringe or another suction device. In bulls, the pipette should be inserted into the sheath and up beside the penis. The sample is then collected either by gently scraping or flushing with a quantity of saline while holding the prepuce closed. Suction is then applied to collect the sample.

In cows, a sample is taken from the vagina in a similar manner. The sample is then expressed immediately into a special culture medium which ensures that the organism will survive until it reaches the laboratory. Your veterinarian will need to order this medium in advance. Therefore, if trichomoniasis is suspected only after visiting your herd, a second visit will be necessary once the kit has been obtained from the laboratory. Testing for both trichomoniasis and another reproductive disease vibriosis is usually done on the same sample, collected from the bull's prepuce.

If only one test is carried out, there is about an 80–90 per cent probability of detecting an infected herd. If the test is repeated at weekly intervals three times, detection rates increase to 99 per cent. For this reason, four negative tests are normally required before bulls can enter artificial breeding centres.



Testing for both trichomoniasis and vibriosis is usually done on the same sample collected from the bull's prepuce.

Trichomoniasis is a notifiable disease

Trichomoniasis is a declared notifiable disease under the *Stock Diseases Act 1923 (SDA)*. This means that if a diagnosis of trichomoniasis is made on a property, the veterinarian making the diagnosis is required by law to notify NSW DPI or an Inspector under the *SDA*.

Properties infected with trichomoniasis are not quarantined (this policy changed in 2011), but notification is important so steps can be taken to minimise the reproductive losses and the risk of further spread.

The DV will normally contact the owner of the infected herd and his private veterinarian to offer advice and recommendations appropriate to the circumstances.

The usual recommendation is for the owner to develop a written management strategy with their private veterinarian with the aim of eliminating the disease from their property. Depending on the circumstances, the DV may assist in developing the plan.

Treatment

There is no approved, effective treatment or commercial vaccine for trichomoniasis available in Australia. (Vaccines used overseas do not prevent infection; but may help speed recovery.)

In the vast majority of situations, the best strategy is to cull all infected bulls. In large herds it may be too costly to replace all bulls at the same time, and splitting the herd into separate mating groups using virgin bulls on a portion may be the preferred option.

In individual high-value bulls localised treatment applied into the prepuce can be considered but is generally not recommended because it usually does not eliminate the infection, only reduces the number of organisms present.

Treatment of cows is generally unnecessary as cows usually recover without treatment with 12 weeks of sexual rest following calving. However, there have been rare cases where cows have carried the infection for longer periods.

Management Recommendations

The following steps will aid in the eradication of the disease from infected properties:

- Ensure that all internal and external fences are stock-proof.
- Separate all bulls from cows and young stock.
- All bulls should be tested four times at weekly intervals after a minimum of one week's sexual rest; before they can be assumed to be negative.
- Cull all positive bulls.
- Pregnancy test all joined cows two months after the bulls have come out, and cull all empty cows.
- Pregnancy test all joined cows again at six months after the bulls come out, and cull all empty cows.
- All cows with vaginal discharge, or any that abort, should be investigated for the presence of the disease.

For the next breeding season, options available include:

- Use artificial insemination rather than natural mating.
- Natural mating using only virgin bulls.
- Use natural mating and replace positive bulls with virgin bulls, or young bulls less than three years of age as they are less able to transmit disease. (This is mainly included as an option for large herds, where it is too expensive to replace all bulls at once. The use of all virgin bulls is preferred, where possible.)

If you use natural mating in the season after the disease is detected, it is important that joining should not commence until three months after the

end of calving, to reduce the likelihood that any cows remain infected. This is likely to mean that the next joining will be late as affected herds generally suffer a drawn-out calving. Producers will therefore need to decide on a cut-off date after which any cow that has not calved is to be culled. It is also essential to limit the joining period to three months or less, and test all bulls after completion of the program, culling any infected bulls.

Prevention

As previously mentioned, there is no vaccine available for trichomoniasis in Australia. The best way to ensure that the disease is not introduced to your herd is to buy bulls from reputable studs, never from saleyards, and by ensuring that boundary fences are secure. When introducing stock, virgin heifers and bulls are the safest options. If there is any reason to suspect an increased risk of trichomoniasis, for example, intended purchase of bulls from northern Australia, testing prior to purchase is recommended.

Controlling other reproductive diseases such as vibriosis (campylobacteriosis) and leptospirosis with appropriate vaccination programs will make trichomoniasis easier to detect.

When introducing bulls to a property, it is good practice to buy them in advance of when they are needed, so that vaccinations have time to take effect prior to joining. Bulls should be quarantined on arrival, and given two doses of vibriosis and leptospirosis vaccine a month apart, prior to their use in the herd. Unless you can obtain assurance, preferably a vendor declaration that these vaccinations have been done, always complete a vaccination program yourself.

Accurate breeding records, pregnancy testing, and a tight joining period, are essential in diagnosing a reproductive problem in your herd.

For more information, contact your private veterinarian or local Livestock Health and Pest Authority District Veterinarian.

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