

TUBERCULOSIS CASE STUDY : DUAL INFECTION AND USE OF  
THE LYMPHOCYTE TRANSFORMATION TEST

M Bringans

In 1983 a breeding hind unit was established on a newly fenced farm as part of an existing deer operation.

The breeding unit consisted of 21 weaner hinds from source "A". (This source was infected with M. bovis, which was discovered at a later date), 20 weaner hinds from source "B" (uninfected) and 40 adult hinds from the original operation.

All weaners were Tb tested onto the farm, the adults were not, and no retesting was done of any stock.

The trouble started 19 months later.

**16 January 1985**

A first calving hind (from source A) was observed losing condition rapidly, with a calf at foot.

**23 January 1985**

The calf died - no post mortem.

**26 January 1985**

The hind had deteriorated even further, so MAF staff destroyed her, finding gross lesions in both thoracic and abdominal cavities. This was later confirmed as M. bovis.

**February 1985**

All hinds on the property were skin tested with 4 reactors resulting (2 from source A and 2 older hinds). All were destroyed and the 2 from source A were found to have lesions which were confirmed as M. bovis.

**April 1985**

All hinds were skin tested again with 6 reactors resulting. These were blood tested (for analysis using a lymphocyte transformation test by Dr Griffin, Microbiology Dept., University of Otago) prior to being postmortemed. The results of this analysis suggested M. avium as the cause. There were no visible lesions in any of the 6 hinds destroyed.

All fawns were skin-tested negative. At this stage the adult hinds were run in 3 separate mobs.

- (i) older hinds
- (ii) young hinds (source A)
- (iii) young hinds (source B)

### July 1985

All hinds were skin tested again, resulting in 2 reactors. Blood tests on these reactors suggested:-

- 1 suspect M. bovis (destroyed but NVL)
- 1 suspect M. avium.

These hinds were later given a comparative cervical test with inconclusive results.

### October 1985

All hinds were skin-tested and every hind was also blood tested. The skin test resulted in 4 reactors. Blood tests showed these reactors to have high avium activity only. Later comparative tests confirmed these 4 to be positive for M. avium.

However, the blood tests also indicated that 3 other hinds had high levels of M. bovis activity (negative to the skin test) and that one had a high level of M. avium (negative to the skin test). At this stage the suspect animals were isolated, all yearling hinds were run together and all adult hinds likewise.

One of the suspect animals died at fawning (the hind with M. avium activity) but was NVL as expected.

### January 1986

All yearlings were skin tested and blood tested. There were no reactors and no suspect animals from blood tests.

### February 1986

Adult hinds were all skin tested, with 3 reactors resulting. At the same time they were all blood tested again.

The 3 reactors had high M. avium activity, and the rest of the hinds bled had no significant WBC activity.

These three have just recently been comparative tested.

The three suspect M. bovis animals at the previous bleeding were clear this time.

Dr Griffin puts forward the theory that these animals had been 'threatened' by M. bovis infection but their immune system overcame this and no lasting infection resulted? This could explain the earlier NVL which had a high M. bovis level.

Obviously we had been dealing with a mixed M. avium/M. bovis problem. The blood test enabled us to isolate any suspicious animals and gave us confidence that many of the reactors were in fact false positives.

The main advantage was, however, that we felt that there was no reservoir of infection left in the herd (false negatives).

The owner of this property will continue skin testing 2 or 3 times per year, plus blood testing any resulting reactors.

To illustrate how important the determination of the false negative (to the skin test) is, we can compare the clinical picture at source A with the above farm, where the whole herd is virtually "wiped out". The last skin testing of the adult hinds on this property turned up one reactor, the blood tests, however, suggest a further ten of these hinds have gross M. bovis lesions. (Eighteen had high M. bovis levels but allowance must be made for some of these developing immunity and resisting the infection).

Postmortem results of these hinds will be due by the date of this Conference.