

NO VISIBLE LESIONS ON POST-MORTEM

If an animal produces a positive response to a test for TB (a.k.a. a test 'reactor') and then shows no visible lesions (NVL) on Post Mortem, your first response may be to think that the test was wrong, assume that it was a false positive result and that your animal was unnecessarily culled.

However, we need to realise that there are other explanations.

If the test is very good at detecting early infection there might not yet have been time for lesions to develop. In that case, it's a brilliant test, because it could then be a tool for removing animals before they are infectious, allowing us to prevent the spread of infection.

If the test detects an immune response to infection, rather than infection itself, this is still very useful; Once exposed to the TB bacterium an animal could pose a serious risk if it remains undetected. Although a proportion of animals which are exposed to infection may become immune, there's no way of knowing which ones remain carriers with latent TB infection. At least knowing which animals have been exposed, gives us a way to halt infection by not giving them the chance to start spreading it. In a herd where TB infection has been identified, by culture of *M. bovis*, the presumption has to be that all animals may have been exposed to the bacterium. The control of many infectious animal diseases, including bovine TB, is predicated on the early detection and removal of infected animals before they become infectious to other animals, allowing us to break the cycle of infection. Remember that our herds and neighbouring livestock and wildlife are at risk, and as this is a zoonosis, so are those handling infected animals.

The only way to find out whether tests throw up real false positives, is to test a large number of animals which are not believed to have been exposed to TB, and see how many react to those tests. Without doing this we can never know how good the tests are; we absolutely cannot infer anything about their specificity (i.e. whether they really throw up false positives) from using them only in infected herds.

Culture of NVL's

This is potentially a way of telling whether the animal truly is infected, but, if there are no lesions to see at post mortem examination, we are struggling to know what exactly to culture from.

In NVL cases, VLA can attempt to grow *M. bovis* from a pool of grossly normal lymph nodes, but this is a slow-growing bacterium that may be found in very low numbers in the initial stages of TB. Therefore, it is not surprising that only about 9% of NVL alpacas (1 in 11) do yield TB bacteria on culture at VLA. This doesn't mean the other 91% didn't have TB - it just means that it wasn't possible to culture it... This is akin to finding a 'needle in a haystack' and means that, when no gross lesions of TB can be found at post-mortem, culture of *M. bovis* is very inefficient. The problem is with finding the right bit of tissue to culture from, rather than that the bugs weren't there.

The Rapid StatPak test is much more effective in identifying VL alpacas than the skin test, which misses most of them. These are the animals most likely to be infecting other members of the herd and perpetuating the TB breakdown. Even so, it is unlikely that a single round of Rapid StatPak blood testing will detect **every** infected animal that may be present in an infected herd, hence the need to develop and validate the new camelid gamma interferon test.

One thing we are certain of is that to come out of TB restriction after a culture-confirmed TB outbreak having used only the skin test risks leaving behind undisclosed infected animals in your herd. This creates the possibility of greatly spreading the disease throughout the industry by way of sales, matings, shows etc. The data collated by the Veterinary Laboratories Agency on the Rapid Stat Pak test used in TB-infected herds are proving this already.

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