Can IDEXX Angio Detect™ accurately detect canine angiostrongylosis?

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Hello and welcome to this recording briefly discussing the knowledge summary entitled; Can IDEXX Angio Detect™ accurately detect canine Angiostrongylosis?

My name is Natashia Weir and I'm a small animal veterinarian with an interest in anaesthesia and critical care medicine. I wrote this Knowledge Summary in collaboration with Dr Jo Ireland of the University of Liverpool, and it was published in December 2021.

 Although an academically fascinating parasite, canine Angiostrongylosis can be incredibly challenging to clinically diagnose. This is partly due to its wide variation of presentations ranging from subclinical infection to acutely presenting cardiovascular, neurological and haematological abnormalities. In some cases, these presentations can lead to fatality and with a clinically deteriorating patient, time is of the essence. With these time pressures in mind, I decided to appraise the available evidence to ascertain if a quick and importantly, highly reliable test was available to accurately detect canine Angiostrongylosis. I, therefore, compared the rapid in-house immunochromatography assay, IDEXX Angio Detect™, to the academic reference standard Baermann coprology.

Unfortunately, Baermann is a suboptimal reference standard test. Problems occur with reported variations in the pre-patent period of Angiostrongylosis vasorum, rendering that larvae will not be detected by Baermann during a pre-patent period. Additionally, Baermann sensitivity is reduced if a patient has low severity Angiostrongylosis due to reduced intermittent larvae shedding. Furthermore, the collection of three consecutive day faecal samples can prolong the time to diagnosis and can sometimes be clinically impractical, but due to there being no true gold standard test Baermann was chosen as the comparator.

Therefore, the PICO was: In dogs, is IDEXX Angio Detect™ as accurate as Baermann coprology when diagnosing Angiostrongylus vasorum infection? The inclusion criteria were peer-reviewed literature that focused on dogs either naturally or experimentally infected with Angiostrongylus vasorum with recorded diagnostic results and the dog being tested by both IDEXX Angio Detect™ and Baermann coprology within these parameters. Each relevant study refined during the April 2021 search consists of three diagnostic accuracy studies and two cross-sectional studies. One of which also included a retrospective case series, one cohort study, one case-control study, and one case series. All papers, unfortunately, contained limitations.

Additionally, not all publications provided specificity of Angio detection but using the data provided they could be calculated with 95% confidence intervals in most cases. And we presented these calculations within the summary of evidence tables. All publications, except Schneider et al. (2014) were unnaturally infected populations, which is more reflective of our clinically encountered cases. Unfortunately, not all publications provided details on the population's clinical signs, which causes difficulty when comparing the sample populations to those found in clinical practice. Occasionally, conflicting results occur

between both diagnostic methods, obtaining a positive result with Angio Detect^{TM} but negative with Baermann, this was considered to be due to reading Angio Detect^{TM} after the 15-minute timeframe, collecting just a single faecal sample, and owner recall bias regarding anthelmintic treatment administration. Obtaining a positive Baermann result but negative Angio Detect^{TM} was considered to be due to antigen detection inhibited by antigen-antibody complexes. in one study, Angio Detect^{TM} obtained a negative result in the mixed worm burden where Baermann confirmed Angiostrongylus vasorum presence, thus highlighting a potential area for further research, positive Angio Detect^{TM} results were obtained in both symptomatic and asymptomatic canine patients.

There were inconsistencies in the faecal collection in the literature with desiccation reported in one study. details regarding faecal transport methods were not provided in some studies. It's important to remember that any delay or inappropriate faecal storage could result in false-negative Baermann results.

So how does this evidence help vets in clinical practice? Well, analyzing the literature, there is weak evidence indicating that Angio Detect^{TM} is a highly specific and moderately sensitive test for diagnosing Angiostrongylus compared to Baermann coprology. Therefore, using the quick in-house Angio Detect^{TM} test will aid the clinician to rule out Angiostrongylus as a differential diagnosis. However, the veterinarian should consider the small sample sizes in the PICO-relevant studies, Baermann's questionable sensitivity, and also appreciate that application of evidence should take the individual patient and the clinician's expertise into account. As Angio Detect^{TM} has moderate sensitivity, if a negative result were obtained in a patient with high clinical suspicion of Angiostrongylus, additional diagnostic procedures would be advised. Thank you for listening.

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