

## **Audio Summaries: Honoria Brown - Can changes in hoof wall temperature and digital pulse pressure be used to predict laminitis onset?**

Honoria Brown

My name is Honoria Brown and my Knowledge Summary considers the use of digital pulse pressure and hoof wall temperature as early non-invasive indicators of laminitis onset.

Laminitis is a longstanding issue of the equestrian world responsible for almost 20% of all cases of lameness. The risk population is primarily grazing horses and ponies, which are either overweight or have an endocrine disease known as Cushing syndrome, both results in the dysregulation of insulin and effectively cause the pedal bone to drop within the hoof capsule. This is very painful for the horse and it presents this lameness, which can be permanent. If the disease progresses to a chronic stage. There was no effective treatment so early recognition and prevention are very important. Despite this many owners struggled to tell if the horse is experiencing the early stages, meaning that often the horse is not taken away from the pasture soon enough to prevent progression to the chronic stage and a recent epidemiological study.

It was revealed that almost all horse owners use hoof wall temperature and digital pulse pressure to determine whether the horse has laminitis or not. These are used in combination with signs of lameness, such as difficulty when turning and a stilted walk. I wanted to instead investigate the possibility of using these as earlier indicators of laminitis before the horse even develops lameness. In my investigation, I identified four case control studies in which laminitis was induced in horses through a variety of methods. I looked at changes occurring in the digital pulse pressure intensity on hoof wall temperature relative to a common point of onset that I chose to be Obel grade II lameness when consistent weight shifting a scene between the affected feet. The digital pulse pressure was measured by palpation studies and a common increase was seen between 0 and 10.52 hours prior to the onset of lameness.

Although palpation is a subjective method of measurement. It is currently the only method and typically in laminitis it is well recognizable as a bounding pulse, hoof wall temperature was also measured by palpation or by thermistors, which were implanted in the hoof wall across the data, provided a palpable rise in temperature was seen at 17.9 to 24 hours before set. These common data points allowed me to form a timeline of expected predictive features. This specifies that in a horse or pony, which is considered to be at risk, a bilateral increase in fallen hoof temperature maintained for longer than half a day indicates that they are approximately one day from the onset of acute laminitis. A period of increased digital pulse pressure indicates that onset is approximately half a day away.

Based on these findings, it should be recommended that the owner of an at-risk horse should palpate hooves and digital pulse twice daily. This may allow laminitis to be predicted up to one day before the onset of clinical lameness. The main limitations of the studies considered were that each study was dominated by a different method and that the sample size is used for small. Therefore, it is

not certain how much they truly represent the natural case whilst this makes the time points that I've linked to these detachable changes, crude indicators, their clinical importance remains. If the horse is removed from pasture, as soon as the changes are detected, it may be sufficient to avoid irreversible damage and to encourage a more favourable clinical outcome.

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