Could pressure algometry support clinical signs in referral of suspected overriding dorsal spinous processes in horses?

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Layperson's message

Clinical signs associated with kissing spine (ORDSP) in horses are often subtle or inconsistent. Owners may notice back pain on touch, discomfort when saddling (e.g. ears back or tail swishing), resistance behaviours such as bucking, reluctance to go forward, or reduced performance. Assessment often relies on subjective interpretation of behaviour and movement, leading to variability in referral for diagnosis. An objective, repeatable measure to support clinical decision-making for veterinary referrals could improve the welfare in affected horses.

Background

Overriding dorsal spinous processes (ORDSP) cause equine thoracolumbar pain, with definitive diagnosis reliant on radiography. An objective 'field-based' measure to support musculoskeletal therapists' clinical reasoning could be beneficial for veterinary referrals and horse welfare.

Objectives

To investigate whether dorsal spinous process (DSP) mechanical nociceptive thresholds (MNTs) can distinguish horses with radiographically confirmed ORDSP from asymptomatic and radiographically negative control horses.

Study Design

Prospective, controlled, observational clinical study.

Methods

50 horses, mixed ages and heights, in 3 groups: A: radiographically confirmed ORDSP(n=20) B: veterinary assessed asymptomatic(n=20), C: radiographically negative ORDSP(n=10). Groups A and B: a digital pressure algometer (PA) device measured triplicate MNTs for DSP and left/right 10cm lateral midline sites from T10–L6. Clinical symptoms of ORDSP (e.g. palpation pain, saddling discomfort, behavioural resistance, reduced performance, reluctance to go forward) were summated. Group C: Triplicate MNTs for DSP T10-L6 for contextual reference values. Statistics: Shapiro-Wilk test, T-tests, linear regression, Spearman's rank correlation, mixed-effects modelling and receiver operating characteristic (ROC) analysis.

Results

Group A demonstrated significantly lower mean MNTs (4.54 ± 0.34 kg/cm²) than group B (8.81 ± 0.36 kg/cm²) ($P < 0.001$). Group C mean MNTs (9.49 ± 0.52 kg/cm²), no significant difference to group B ($P > 0.05$). No significant associations between left or right MNTs, $P > 0.05$. Group A DSP MNTs were significantly associated with lesion count ($r^2 = 0.24$, $F(1,18) = 5.68$, $P = 0.03$) with negative correlation ($\rho = -0.61$, n=20, $P = 0.004$) and negative correlation with symptom burden ($\rho = -0.51$, $P = 0.02$). ROC analysis identified DSP MNT threshold of ≤ 4.08 kg/cm² (AUC = 0.90), with 85% sensitivity, 90% specificity.

Conclusions

Horses with a greater number of radiographic ORDSP sites exhibit lower DSP MNTs. Asymptomatic horses exhibit higher mean DSP MNTs. Veterinary referral is strongly indicated for undiagnosed horses when DSP minimum MNT ≤ 4.08 kg/cm² is combined with ≥5 symptom burden score.

Key words: equine, back pain, overriding spinous processes(ORDSP), thoracolumbar, mechanical nociceptive threshold(MNT), welfare

Main Limitations: Moderate sample size and absence of assessor blinding.

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