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Effects of pain due to lameness on cow gait: a dose-dependent response to ketoprofen

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The Problem

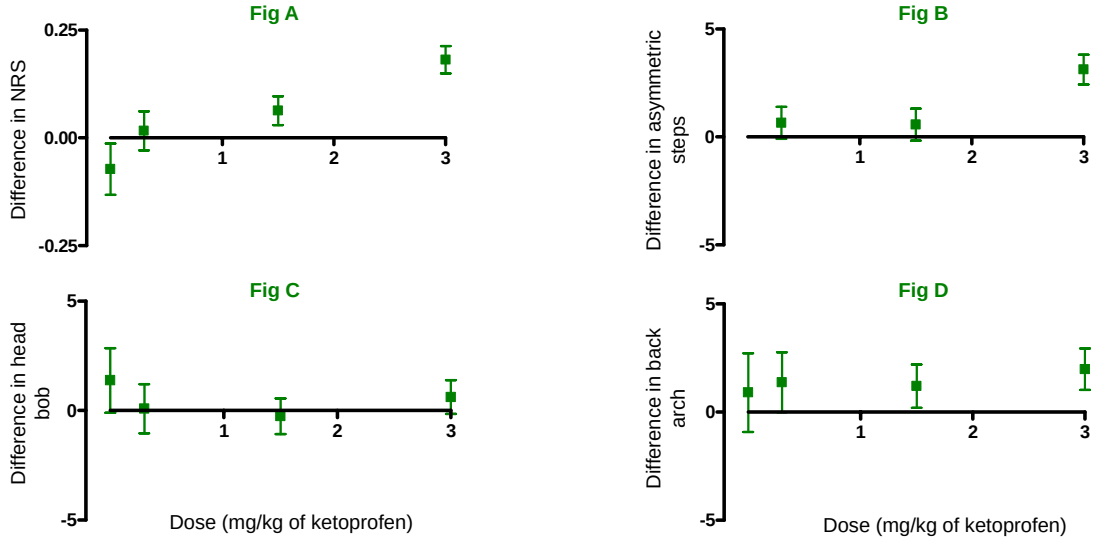
Changes in gait of lame cows are due in part to pain experienced while walking. The aim of this study was to identify how gait changes when a pain-relieving non-steroidal anti-inflammatory drug (ketoprofen) is administered.

Methodology

Cows were randomly assigned to ketoprofen dose (0.0, 0.3, 1.5, 3.0 mg/kg IM), balanced for initial gait score, in 3 separate studies (n=17; 24; 21). Each study consisted of 3 phases each lasting 3 d: before, during and after ketoprofen treatment. Overall gait (NRS ranging from 1 to 5) and 6 specific gait attributes (back arch, head bob, tracking-up, joint flexion, asymmetric steps, and reluctance to bear weight, each evaluated using a 100-unit VAS) were assessed from video recordings. Observers were blind to treatment.

Results

Compared to before and after periods, gait improved during the period of treatment with ketoprofen. This improvement showed a dose-dependent response for our overall measure of gait (NRS, $P < 0.001$; **Fig A**) and for one specific gait attribute (asymmetric steps, $P < 0.03$, **Fig B**). Other gait measures (e.g. **Fig C** and **D**) showed no clear linear response to dose of ketoprofen. Figures below show the change in the measures during the treatment period in comparison to baseline.



Implications

This study indicates that an overall multi-component gait score and one specific gait attribute (asymmetric steps) are useful in recognizing pain-mediated changes in dairy cow gait.

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