A preliminary study of the effect of chiropractic treatment on the splenius muscle in horses when measured by surface electromyography

*J. Langstone MSc, J. Ellis MSc, C.Cunliffe DC PhD

McTimoney College of Chiropractic, Kimber Road, Abingdon, Oxon, OX14 1BZ, UK

*corresponding author E: jinkismet@btopenworld.com

OBJECTIVE: to determine if there is a relationship between objective measurable muscle parameters and misalignments and muscle tension in the cervical spine of equines.

OUTCOME: Measuring muscle activity may be a useful method of determining the effectiveness of chiropractic treatment in horses.

INTRODUCTION

- There is limited scientific data to support the physiological improvements of chiropractic treatment of animals.
- Surface Electromyography (sEMG) is a non-invasive measure of muscle activity. The splenius muscle is in part a stabilising muscle and shows activity when the horse is at rest.
- Measurement of the activity in a stabilising muscle of the cervical spine and assessment of any changes may provide evidence based support for chiropractic techniques.

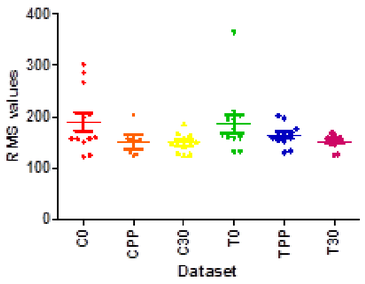
METHODOLOGY

- A controlled paired randomised study was designed using 14 horses from the same yard; the treatment group (n=7) received (McTimoney) chiropractic treatment for the neck, back and pelvis following palpation. The control group received palpation only.
- sEMG readings of the splenius muscle were recorded at time 0, post palpation and 30 minutes. Each reading was taken for 20 seconds. Methodology was similar to Licka et al (2009).
- Data was analysed by one-way ANOVA for a global inter-group analysis and by two-tailed, non parametric, paired T-test (Wilcoxon matched pairs) for subsequent local comparison of any 2 datasets.

RESULTS:

- There was a significant difference ($p<0.05$) between sEMG analysis time zero to that post palpation for control and treatment groups.
- Post treatment, there was a significant decrease in sEMG activity for treatment group time 0 to 30minutes and post palpation to 30 minutes ($p<0.01$).
- There was a significant decrease in sEMG for right side for treatment group time 0 to 30minutes and post palpation to 30 minutes ($p<0.05$).
- There were no such significant effects for the control group.
- 83% of horses had atlas rotation and tilt to the right.

Figure 1:
Comparison of RMS values for control and treatment groups



Legend:
C: Control Group,
T: Treatment Group
0: Time point zero
PP: Time point post palpation
30: Time point 30 minutes

CONCLUSIONS

- This preliminary study supports the use of sEMG as a means of assessing muscle activity of equines.
- Evidence of a statistically significant reduction in splenius muscle activity observed following (McTimoney) chiropractic treatment .
- The reduction in splenius muscle activity post palpation may be due to therapeutic touch and/or habituation.
- Further research is recommended to establish measureable effects in relation to performance parameters.

REFERENCES

Licka, T., Frey, A., Peham, C. (2009) Electromyography activity of the longissimus dorsi muscle in horses when walking on a treadmill. The Veterinary Journal 180: 71-76.