

Equine laminitis in the new millennium: frequency, risk factors and assessing a potential new therapy.



Claire E. Wylie¹, Simon N. Collins¹, David I. Rendle², Andy E. Durham³, Kristien L. Verheyen⁴, J. Richard Newton¹.

Western Counties Equine Clinic Ltd



¹ Animal Health Trust, Lanwades Park, Kentford, Newmarket, Suffolk, CB8 7UU.

² Western Counties Equine Clinic, Culmstock, Cullompton, Devon, England EX15 3LA.

³ The Liphook Equine Hospital, Forest Mere, Liphook, Hampshire, England GU30 7JG.

⁴ Royal Veterinary College, North Mymms, Hatfield, Hertfordshire, England AL9 7TA.



Introduction

• Laminitis is a painful and debilitating disease of the foot (Fig. 1) resulting from insult to the junction between the dermal and epidermal lamellae

• It is a very common condition of horses and ponies within Great Britain (Hinckley and Henderson, 1996)

• Despite this, epidemiological studies of laminitis are limited, particularly in Great Britain

• Much remains unknown about the aetiology, pathogenesis, true frequency and risk factors for the disease

• Recent evidence that laminitis is associated with decreased insulin sensitivity (Treiber *et al*, 2006) suggests treatment with metformin (dimethylbiguanide) may be of benefit, justifying further clinical investigation (Durham *et al*, 2008).

Aims and Study Design

This project commenced in October 2008.

Aim 1

To quantify the frequency of occurrence of laminitis in the British horse population

- Determine incidence and prevalence of equine laminitis in Great Britain
- Establish cohort of horses and ponies attended by a sample of British veterinary practitioners
- In Jan 2009 each equine veterinary practice within Great Britain (n=1169) was contacted

Aim 2

To describe the epidemiology of laminitis as it occurs in horses in Britain

- Identify and quantify risk factors
- Conduct case-control study nested within the practitioners' cohort of horses used to estimate frequency
- Identify exposure variables by an owner-based questionnaire: including questions on grazing, feeding, housing, farriery, exercise, seasonality, health and disease

Aim 3

To facilitate and implement effective treatment and prevention of laminitis in Britain

- Assess the efficacy of metformin to provide clinical benefit for laminitis cases
- Conduct a double blinded, randomised, controlled field trial



Fig. 1. Common clinical presentation of equine laminitis, with the front legs placed in front of the body to shift the weight to the commonly less severely affected hind feet (Courtesy of World Horse Welfare).

Preliminary Findings

Aim 1:

- 171 practices responded, 17 practices reporting they no longer do equine work
- 144/154 (94%) equine practices were interested in assisting further with the study, 10 practices (6%) were not interested (Fig. 2)
- Spatial analysis of responding practices: SaTScan statistic for most likely cluster of participants $p=0.114$, (where $P \leq 0.05$ indicates significant clustering or lack of participants compared to the underlying population)

- 143 practices reported a total approximate figure of 365,170 **horses/ponies visited per year** (mean = 2553, median = 1100, range 30-21,900 horses visited/practice/year) (Fig. 3.)

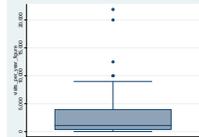


Fig. 3. Box plot showing the approximate number of horses/ponies visited per year reported by responding equine practices.

- 144 practices reported approximately 9111 **cases of laminitis were visited a year** (mean = 63, median 30, range 1-730 cases/practice/year) (Fig. 4.)

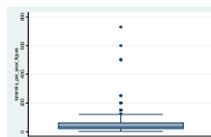


Fig. 4. Box plot showing the approximate number of cases of laminitis visited per year reported by responding equine practices.

- These figures suggest laminitis cases contribute to between 0.11-28.57% of all equine visits, with a mean of 5.03% and a median of 3% (Fig. 5.)



Fig. 5. Box plot showing the percentage of laminitis cases attended each year reported by responding equine practices.

- Agreed case definition and recruitment of practices to cohort study ongoing

Aim 2:

- Risk factor questionnaire under review

Aim 3:

- Field trial planned for the last quarter of 2009

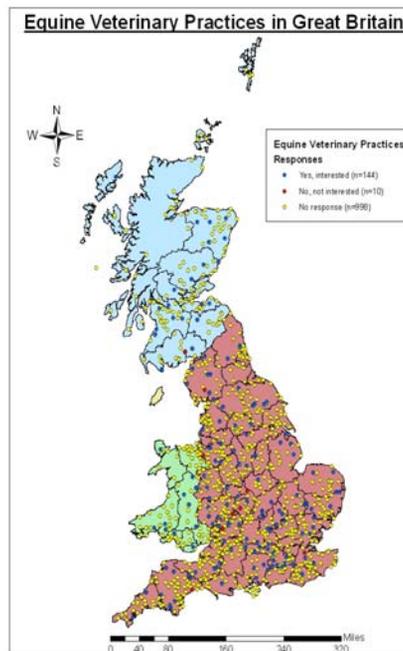


Fig. 2. Responses from all equine practices registered with the RCVS Directory of Practices (n=1169). A random sample of compliant practices will be chosen to contribute data to the cohort study.

Discussion

- Data were collected from a geographically representative sample of the British equine veterinary population
- Preliminary results suggest laminitis accounts for a variable proportion of equine veterinary visits
- Considerable care should be taken in interpreting preliminary, self-reported data
- More accurate data on the frequency and epidemiology of laminitis will be collected from compliant practices using robust study designs
- Improved knowledge will allow more thorough evaluation of efficacy of new therapies and facilitate preventive measures in the wider equine population

Literature cited

- Durham, A.E., Rendle, D.I. and Newton, J.R. 2008. The effect of metformin on measurements of insulin sensitivity and β cell response in 18 horses and ponies with insulin resistance. *Equine Veterinary Journal*, 40(5), 493-500.
- Hinckley, K.A. and Henderson, I.W. 1996. The epidemiology of equine laminitis in the UK. 35th BEVA Annual Congress Proceedings, Warwick, UK.
- Treiber, K.H., Kronfeld, D.S. and Geor, R.J. 2006. Insulin resistance in equids: possible role in laminitis. *Journal of Nutrition*, 136, 2094-2098S

Acknowledgments

This project has been generously funded by World Horse Welfare.



Map - source: 2001 Census Output Area Boundaries. Crown copyright 2003. Crown copyright material is reproduced with the permission of the Controller of HMSO.

Further information

Please contact Claire Wylie at the Animal Health Trust.
☎: 01638 552993 (Ext:1241)
☎: 01638 555659
✉: claire.wylie@aht.org.uk