

Animal Health Trust



Integrating systematic reviews with epidemiological studies of equine laminitis to deliver evidence-based benefits in clinical veterinary practice

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Summary

- Laminitis is a painful and debilitating disease of the horses' foot which can lead to euthanasia on welfare grounds in severe cases
- Two systematic reviews assessed the best evidence regarding the frequency of, and risk factors, for naturally-occurring laminitis
- Design of new epidemiological tools assisted the conduct of cohort and nested case-control studies in Great Britain (GB)
- This work should lead to evidence-based recommendations for interventions to prevent and control laminitis, improving equine welfare

Introduction

- Laminitis is a painful and debilitating disease of the equine foot resulting from insult to the junction between the dermal and epidermal lamellae
- "Better understanding of epidemiology key requirement in conquering the disease"(2nd International Workshop of Equine Laminitis, 2010)



Completed epidemiological studies

- Active laminitis in horses/ponies in GB
- Two year (2009-2011) prospective vet practicelevel cohort and nested case-control study
- 30 practices: 48,082 registered horses reported 235 laminitis episodes in 46,814 HYAR
- Owner-level questionnaires were received for 191 laminitis cases and 819 controls





Creating Awareness & Reporting Evidence about Laminitis



A cohort study of owner-reported laminitis frequency and risk factors, CARE about laminitis, is creating awareness and reporting evidence for the disease

Current epidemiological studies

- Further investigation of active laminitis in horses/ponies in GB
- Prospective owner-level cohort study
- Modification of epidemiological tools for use by lay people
- Validation of owner-reported clinical data with veterinary diagnosis
- Sample size estimations indicate data required from 5000 HYAR (~3,333 animals over 18 months)

Laminitis occurs when there is pain within the sensitive structures which bind the distal phalanx to the internal hoof capsule, supporting the weight of the animal

Systematic reviews with quality appraisal



Flow diagram of the selection process for the two systematic reviews: blue numbers relate to the frequency paper, green numbers to the risk factor paper

Steps outlining the integration of systematic reviews of available evidence with epidemiological studies of laminitis

Frequency

- Prevalence 0.49% (CI 0.43–0.55%)
- Incidence 0.50 cases/100 HYAR (CI 0.44–0.57)
 Risk Factors
- Novel, modifiable risk factors included:
 - ↑ risk with: weight gain in previous 3 months; new access to grass in previous 4 weeks; box rest in previous week; increasing time since anthelmintic treatment
 - ↓ risk with supplement feeding and transportation in previous week

Conclusions

- Owner-reported estimates may be more representative of general population
- Prospective cohort study stronger evidence

- Web-based system of data collection:
 - www.careaboutlaminitis.org.uk

Discussion

- Standardised epidemiological studies of laminitis will assist future systematic reviews with meta-analysis to provide the highest level of evidence
- Programme of work should enable evidence-based recommendations for interventions to prevent and control laminitis, improving equine welfare

Literature

- Wylie et al, (2011) Vet J, 189 (3), 248-256
- Wylie et al, (2012) Vet J, 193 (1), 58-66
- Wylie et al, (2013) EVJ, 45 (6), 681-687
- Wylie et al, (2013) Vet J, 198 (1), 57-69

Frequency

- Ten papers considered most reliable: prevalence estimates 1.5% to 34.0%
- Generally poor quality

Risk Factors

- Six papers considered most reliable: association with increasing age and chronic laminitis
- Limited in number and scope
- Reasonable quality

Conclusions

 Need for high-quality evidence-based studies and standardised epidemiological research tools

	IMAL HE ITIS REP				M			v	Hors		re
1. Name of horse/pony:											_
2. Surname of owner/Case ID:									Π		_
3. Date of clinical examination:		m m]/[у	у	y Y					
4. Lameness		A YES	ssess	ment	(ple	<i>ase</i> NO	55 0	one o	<i>n pe</i> DN'T		s
Recumbent]	
Refusal to move unless forced											-
Reluctance to walk											
Lame at walk]	
Lame at trot]	
Short, stilted gait at walk											
Short, stilted gait at trot]	
Difficulty turning]	
											_

. Stance	Assess YES	sment <i>(please cross on</i> NO	<i>e option per line)</i> DIDN'T ASSESS
Shifting weight			
Front feet placed in front of body			
Front feet placed underneath body			
Square stance			
Reluctance for a foot to be lifted			

6. Feet affected	Assessmen YES	t <i>(please cros</i> NO	s one option per line) DIDN'T ASSESS	Most severely a (please cross	affected foot/feet all that apply)
Right fore					
Left fore					
Right hind					
Left hind					

7.	Clinical signs of the most severely affected foot/feet	YE	Assessment <i>(plea</i> 5	se cross one optic NO Dì	o <i>n per line)</i> IDN'T ASSESS
Γ	Increased digital pulse] [
	Increased hoof temperature] [
	Decreased hoof temperature] [
	Pain on sole pressure] [
	Coronary band swelling] [
	Coronary hand depression				

 Clinical signs of the <u>most</u> severely affected foot/feet 	Assess YES	sment <i>(please cross ol</i> NO	<i>ne option per line)</i> DIDN'T ASSESS
Divergent growth rings (wider at heels)			
Change in dorsal hoof wall angle			
Wall separation			
Flattened or convex sole			
Widened white line			
Pink crescent dorsal to frog			
Prolapsed sole			



Equine laminitis questionnaire

This questionnaire is made up of 9 sections:

- Section 1. Your horse's details: this section asks some important general information about your horse/pony.
- Section 2. Laminitis: this section is about your horse's history of laminitis.
- Section 3. Turnout: this section is about your horse's turnout and the management of provided grazing.
- Section 4. Stabling: this section is about your horse's stabling environment
- Section 5. Feeding: this section is about your horse's feeding.
- Section 6. Transport: this section is about how your horse is transported.
- Section 7. Exercise: this section is about your horse's recent levels of exercise.
- Section 8. Parriery: this section is about the maintenance of your horse's hooves.
- Section 9. Health: this section is about your horse's health management and any recent ill health

INSTRUCTIONS:

All instructions are printed in Atalca.

Please answer each question by choosing one category only, unless you are directed otherwise.

Please use a cross χ to indicate your choice(s) for each question. For example:

Please complete the questionnaire in BLACK ink.

Please complete this questionnaire for the horse/pony that your veterinary surgeon has recently diagnosed with laminitis. For the purposes of this questionnaire the term 'horse' refers to both horses and ponies.

Unless otherwise stated this questionnaire refers to the week prior to your horse's most recent episode of laminitis, as diagnosed by your veterinary surgeon. If your horse suffers from chronic laminitis this questionnaire therefore refers to the most recent flare-up of the condition.

The data obtained from this questionnaire will be used to help improve the health and welfare of horses and ponies. The Animal Health Trust and the Royal Veterinary College will hold any personal information purely for the purposes of this study and in accordance with Data Protection Act 1998. We will not pass this information to any third party. The personal data will be destroyed at the end of this project.

Standardised data collection tools were developed to collect information on active laminitis ("Laminitis Reporting Form", left) and owner-reported risk factors ("Equine Laminitis/Management Questionnaire", right) — — —

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