

## Laminitis A Vet's Perspective

# Laminitis

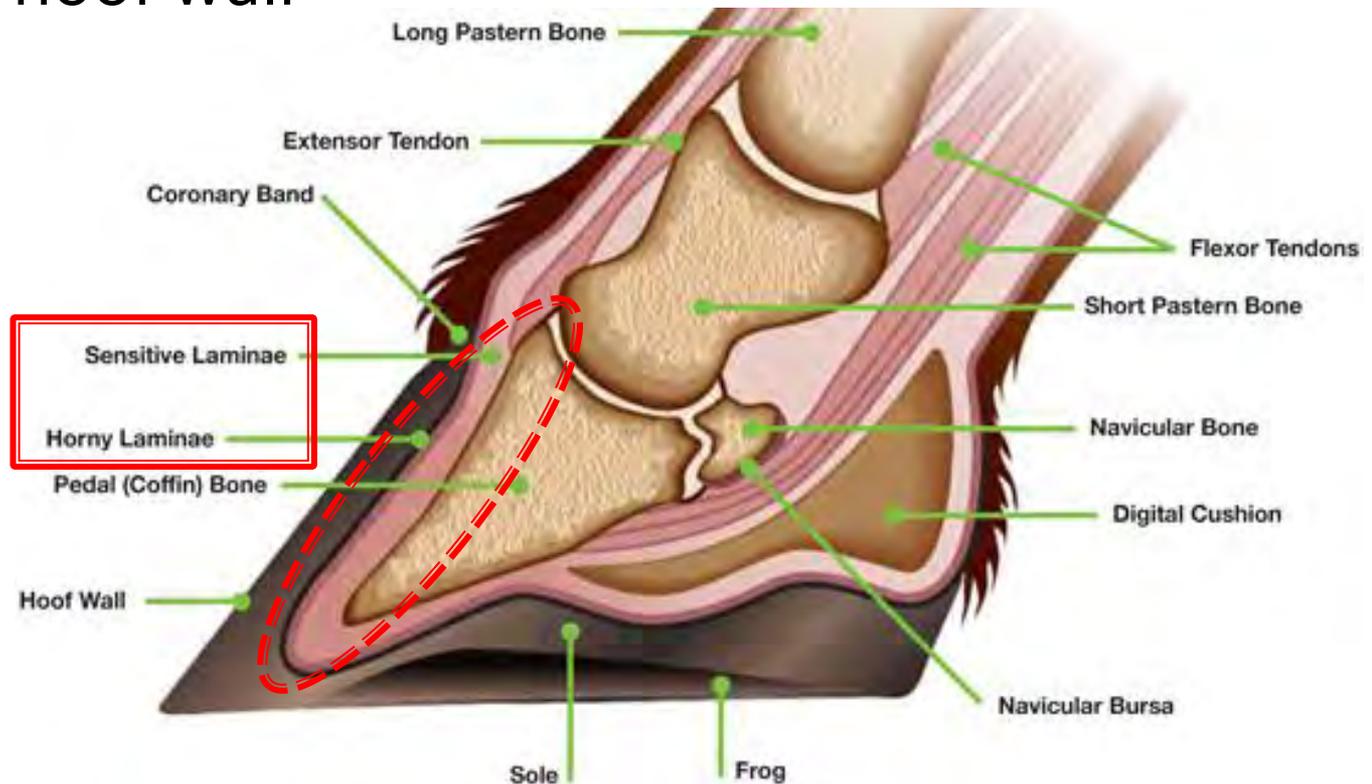
- What is laminitis?
- Who gets it?
- What are the causes of laminitis?
- What are the clinical signs?
- How is laminitis treated?
- What can be done to prevent it?

# Laminitis presents in many ways



# What is laminitis?

- Damage to the blood supply to the laminae – the soft tissue attachment - that bind the pedal bone to the hoof wall



# What then happens?

- Tissue damage, inflammation & pain



# What then happens?

- Attachments breakdown and pedal bone rotates, and ultimately sinks, under the pull of flexor tendon



# How common is laminitis?

- Worldwide estimates of prevalence range from 2% to 24% of horses and ponies
- In the UK, 5% of animals have chronic or recurrent laminitis
- Around 8,000 new cases each year in the UK

# Who gets laminitis – risk factors

- Pony breeds 4x more likely to develop laminitis
  - for every 1 cm increase in height, risk decreases by 3%
- Mares may be at greater risk



# Who gets laminitis – risk factors

- Age – older horses are 3-5 times more likely to get laminitis
- Obesity – especially a thick crest
- Season – 3 times more likely in summer and winter, compared with spring

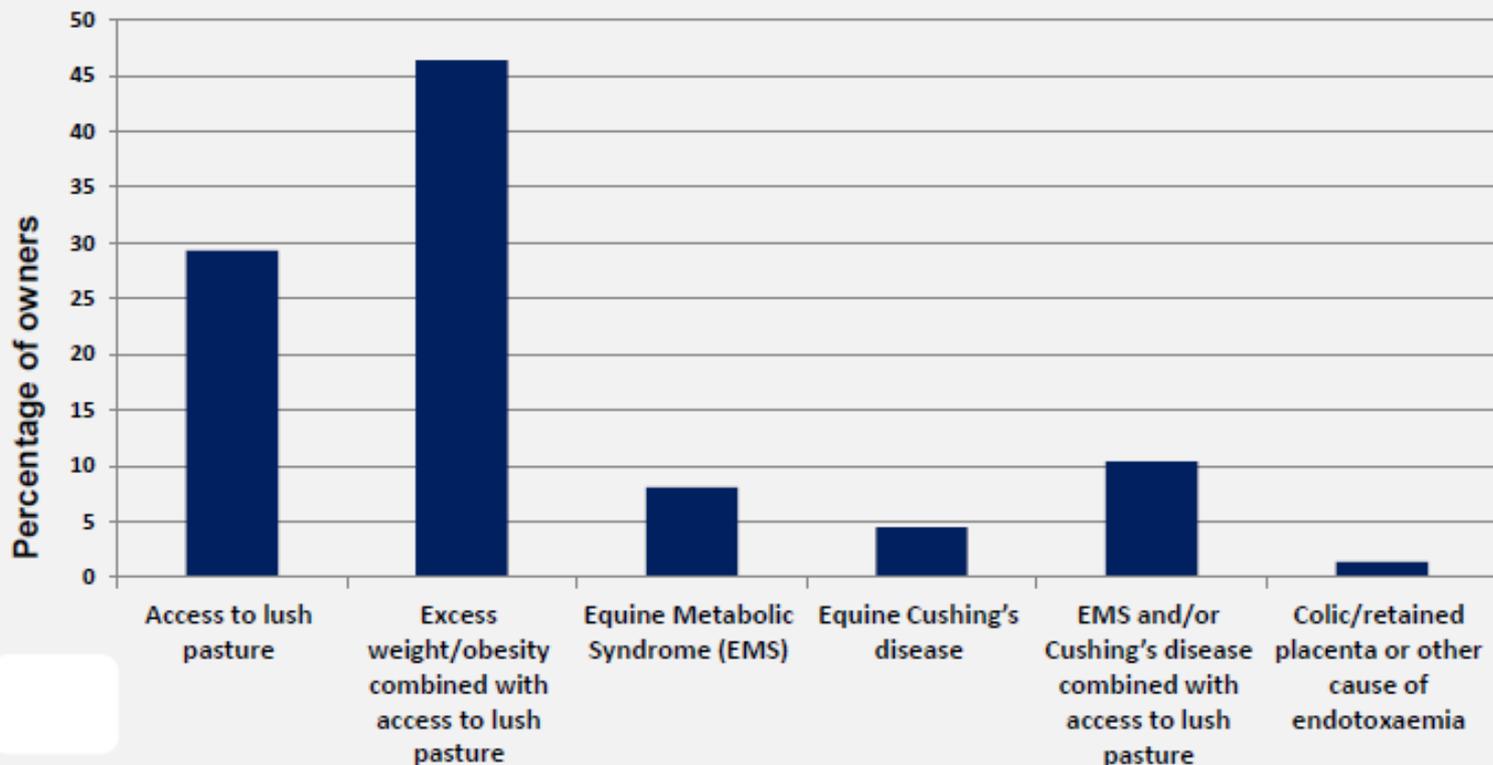


# What causes laminitis?

- Pasture-associated
  - lush grass
- Hormonal and metabolic problems
  - Cushing's disease, equine metabolic syndrome (EMS)
- Systemic inflammation
  - colic, diarrhoea, retained foetal membranes
- Trauma or mechanical injury
- Corticosteroid anti-inflammatories

# What do you think causes laminitis?

- 222 horse owners asked what they believed to be the most common cause of laminitis in the spring



# Pasture-associated laminitis

- Fructans – sugars found in grass- cause laminitis in experimental studies
- ... but only at levels far in excess of those naturally found in grass
- Fructans act by raising levels of the hormone insulin, which triggers laminitis



# Pasture-associated laminitis

- Fructan levels in grass
  - increase following dry or cold spells
  - are highest in May, lowest in August , and high again during autumn and winter
  - rise from late morning to peak early afternoon, and are lowest at night
  - can be reduced by maintaining a short sward through grazing, mowing or over-stocking
  - lower at tip of plant – benefit of grazing muzzle

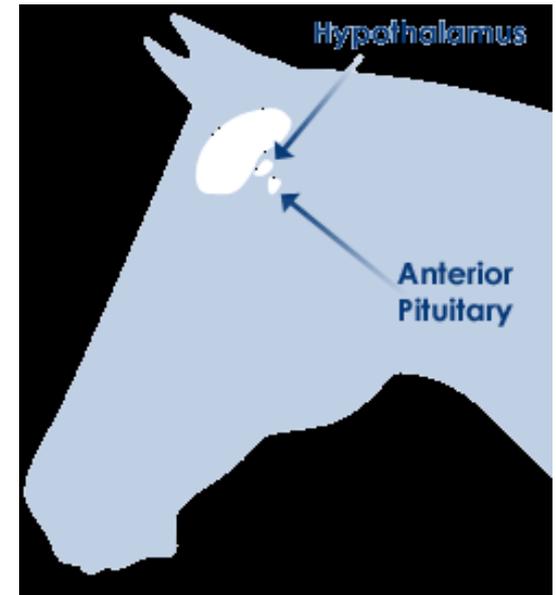
# Hormonal basis of laminitis

- 90% of laminitis cases have an underlying hormonal or endocrine problem
- Pony breeds have inherent insulin resistance – a 'thrifty gene' that enables them to store body fat even when food is scarce
- Insulin resistance also occurs with obesity, in Cushing's disease and EMS
- The result is higher circulating levels of insulin



# Cushing's disease

- Endocrine disorder of older horses and ponies – affects 20% of veterans
- All breeds
- Disorder of the pituitary gland, leads to excessive secretion of several hormones
  - some of which antagonise the action of insulin
  - insulin levels increase in an attempt to compensate



# Equine metabolic syndrome

- Peripheral Cushing's disease, pre-laminitic syndrome, associated with insulin resistance
- All breeds, all ages
- Normal to obese body condition
  - enlarged crest
  - prominent fat pads
  - bulging fat above eyes



# Equine metabolic syndrome



# Systemic inflammation

- Severe illness with endotoxaemia and release of bacterial toxins
  - colic
  - diarrhoea
  - retained placenta



# Mechanical laminitis

- Trauma or concussion
  - hard ground
  - short toes
  - severe lameness, e.g. fracture, overloading of other limb(s)



# Corticosteroid-induced laminitis

- Corticosteroids are routinely used for treatment of lymphangitis/cellulitis, allergic reactions, back conditions, and osteoarthritis
- Can precipitate laminitis but precisely how is unclear
- Laminitis is unrelated to route of administration (oral, intravenous, intra-articular), dose, or duration of treatment
- Avoid wherever possible in ponies, obese animals, and those with a history of laminitis

# Clinical signs of laminitis

- Range of signs relating to foot pain
  - acute different to chronic
  - mild cases different to severe
- Most commonly front feet
- Signs not always specific to laminitis
- Atypical or unusual signs can be confusing
  - unilateral or mild bilateral laminitis
  - hind feet only

# Laminitic stance



# Clinical signs of laminitis

- Lameness
- Stiff or pottery gait
- Difficulty turning
- Resistance to picking up feet
- Lying down
- Shifting weight
- Reluctance to move
- Changes in hoof shape



# Clinical signs of laminitis

- Strong/bounding digital pulse
- Feet feel hot/warmer
- Pain on hoof testers



# Signs of chronic laminitis

- Long heels, divergent growth rings, concave toe
- Widening and separation of white line, with 'seedy toe'
- Swelling or depression at coronet



# Diagnosing laminitis

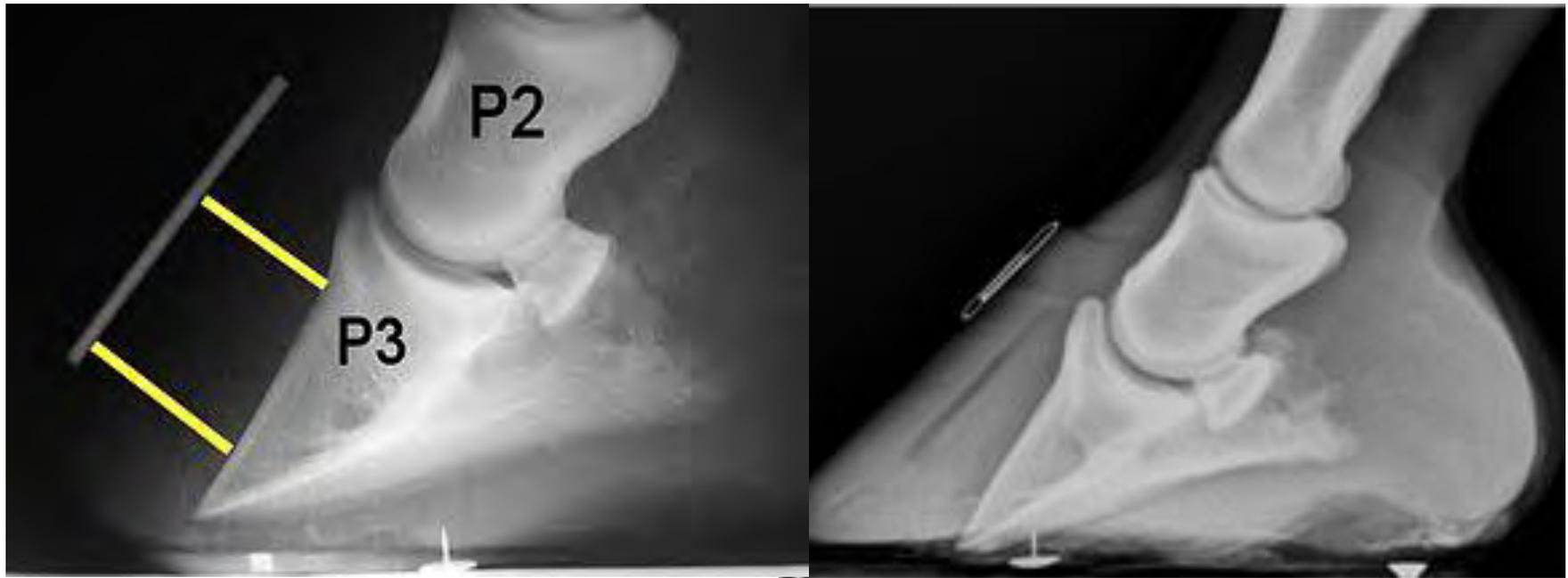


- Clinical signs
- Radiography
- Nerve blocks



# Radiography

- Degree of rotation
- Sinking of pedal bone



# Treatment of acute laminitis

- Reduce pain
  - nonsteroidal anti-inflammatories
- Restore blood flow
  - ACP
- Support pedal bone
  - frog support or pads
- Remove from cause
  - stable on a deep bedding



# Frog support



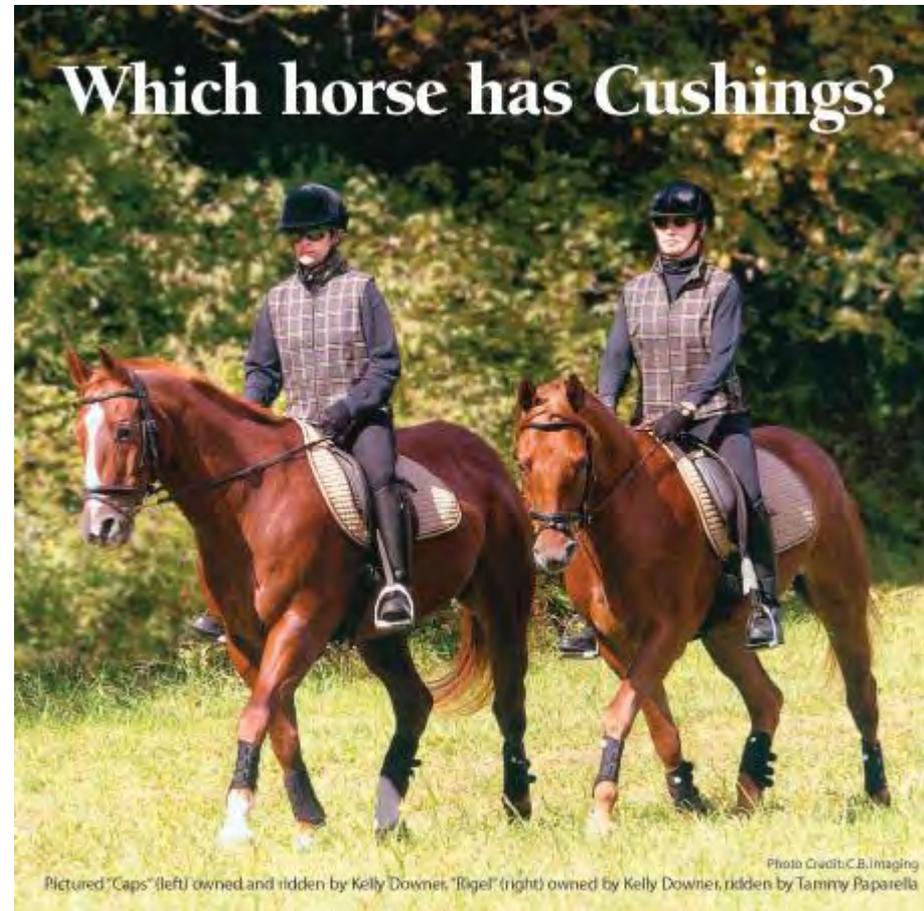
# Treatment of laminitis

- Identify and treat any underlying cause(s)
- Once acute phase is over, look to longer-term foot support
  - heart bar shoes, gel pads
- Regular farriery with follow-up x-rays



# Treating underlying disease

- Cushing's disease
  - blood sample for ACTH
  - pergolide
- Equine metabolic syndrome
  - fasting blood sample for insulin and glucose
  - weight loss, exercise, metformin

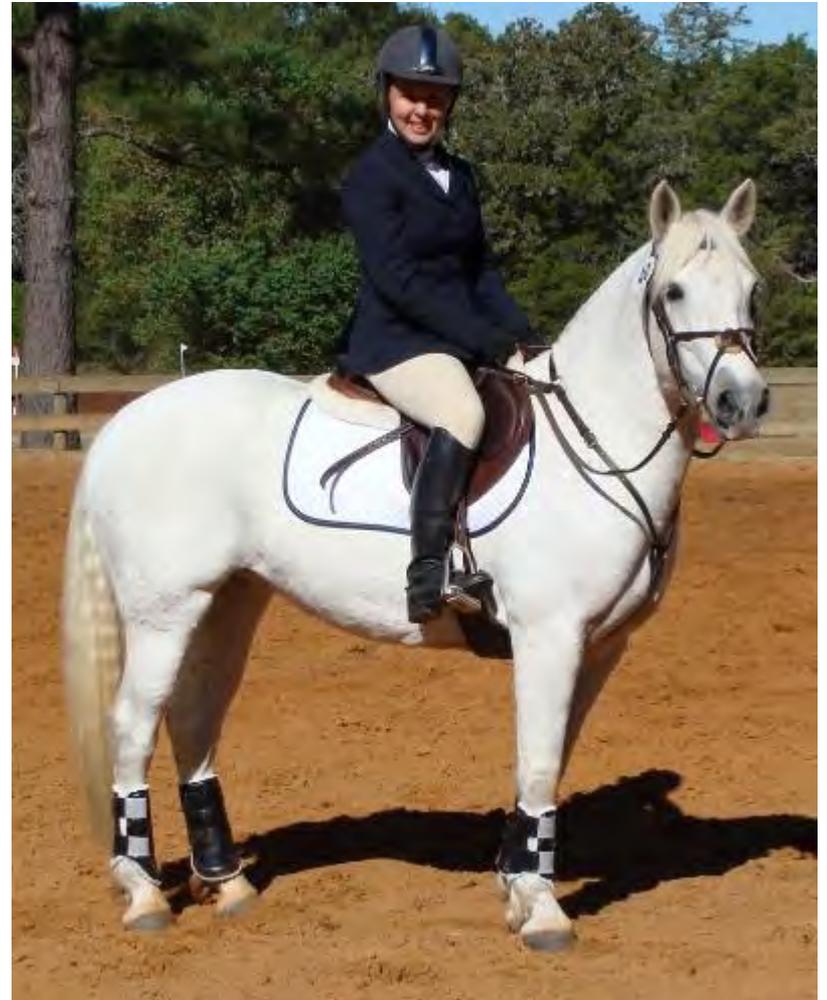


# Preventing laminitis

- Identify horses and ponies at risk
- Avoid unlimited access to grass, especially winter/summer, especially if dry or cold
  - pasture management, grazing muzzle
- Restrict weight gain - special diet?
- Maintain regular exercise
  - controls weight and improve insulin sensitivity
- Regular farrier visits

# Case 1

- Connemara x, 14.3hh, gelding, 9 yo, eventing BE100
- July 2009
- Came in from field lame RF, lameness resolved with overnight box rest
- Two days later lame again



# Case 1 - investigation

- Lamé LF, 3/10
- Mild increase digital pulse, no reaction to hoof testers
- Nerve block LF foot
  - abolished lameness
  - now 2/10 lame RF
- X-ray 3-5° rotation pedal bone both feet



# Case 1 – initial management

- Box rest, frog support pads, ACP, Danilon
- But increasingly uncomfortable walking out
- Repeat X-rays
  - 7° rotation LF
- Blood samples
  - ACTH increased
  - insulin/glucose normal



# Case 1 – long-term management

- Pergolide for Cushing's
- Repeat bloods every 3-4 months
- No rotation on X-rays
- Normal shoes
- Return to full competitive activities
- Anti-doping issues!



# Case 2

- Irish sports horse, 6 yo, eventing Novice/CCI\*
- July 2011
- Returned from event lame RF
  - swelling fetlock joint
  - sensitive to flexion test lower limb



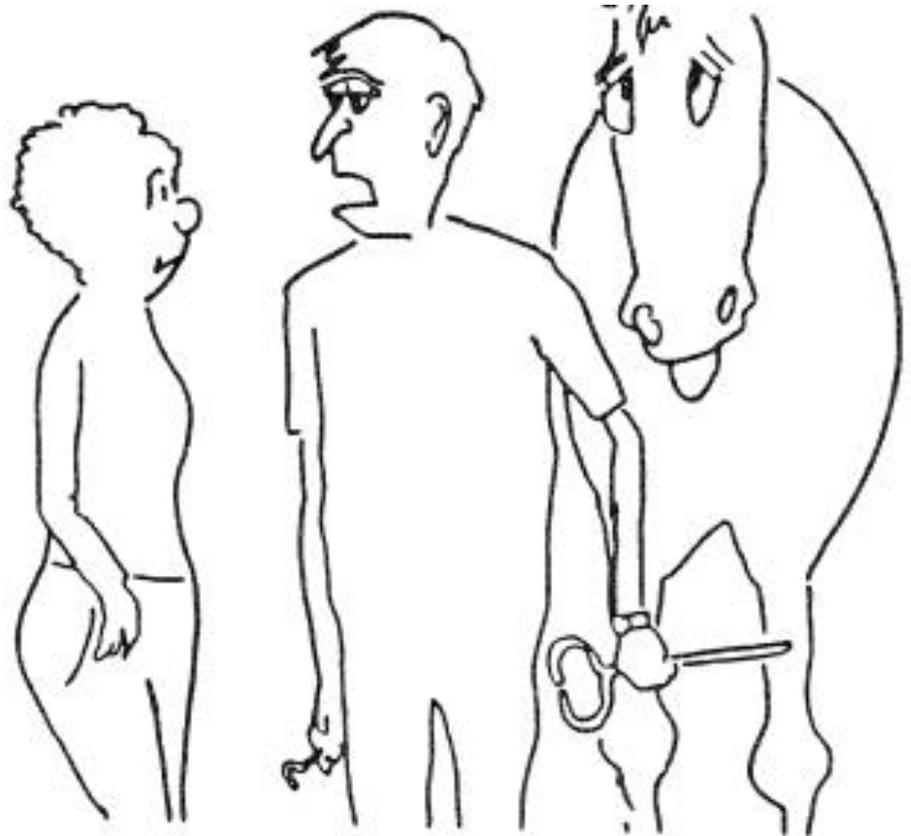
# Case 2 - investigation

- Nerve block fetlock joint
  - still lame
- Nerve block foot
  - sound
- X-ray feet
  - signs of chronic laminitis RF, 7° rotation
  - No abnormalities LF



# Case 2 – initial management

- Heart bar shoe
- Limited turnout
- Still lame after 18 weeks
- X-rays show no worsening of rotation
- Owner now getting grumpy!
- Check for Cushing's and EMS



**“First the good news: he has 3 excellent legs.”**

# Case 2 – treatment

- ACTH normal
- Insulin/glucose raised
- 8-week course metformin tablets
- Strict diet
- Loses 32 kg in 8 weeks, insulin/glucose normal
- Sound, returns to work



# Questions

