Laminitis

- Aka “Founder”
- Laminitis – Inflammation of the sensitive laminae within the foot.

Why is Laminitis important?

- “45% of horses are estimated to be afflicted with laminitis over the course of their lifetimes, and 75% of these horses develop severe or chronic lameness and debilitation that necessitates euthanasia.”
- “From an economic perspective the diagnosis and treatment of laminitis is estimated to cost $8 million annually, and the monetary loss of animals euthanized each year following complications of laminitis is approximately $5 million.”
- When AAEP surveyed equine practitioners in 2013 to ask where research resources should be focused laminitis was at the top of the list.
  - There is currently on-going project on Laminitis through AAEP
  - “The Disease Can be Life Threatening”

Causes of Laminitis

- Systemic Disease
  - Grain overload, Infectious Colitis, Endometritis or Pleuropneumonia
  - Excessive weight/Concussion
    - Road founder and contralateral limb lameness
- Laminitis associated obesity and insulin resistance in the horse
  - EMS

What is the Laminae?

- Heat may be related to laminitis “Arizona”

Drug Related Laminitis, Hormonal laminitis, Cold weather laminitis, Stress related laminitis, Cushing related laminitis
Mechanism of Laminae Damage

- Vascular - decreased blood supply
- Enzymatic - Enzymes breakdown the laminae
- Traumatic Theory - Pressure, concussion
- Metabolic/Endocrine Theory

The exact mechanism that lead to the structural failure of that laminar interdigitation are unknown, but several hypothesis are suggested.

Anatomy

Vasculature

Hoof Anatomy

What is Normal?
What’s Abnormal?

<table>
<thead>
<tr>
<th>Under-run heels</th>
<th>Broken Back</th>
<th>Broken Forward</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Low</td>
<td></td>
</tr>
</tbody>
</table>

Chronic Laminitis

- Seedy Toe
- Club Foot
- Sled Foot
- Diverging Growth Rings

How do We Diagnose Laminitis?

- Physical Exam Findings
  - Radiographs
  - Digital Venography

Physical Exam

- Depressed
- Not eating
- Unwilling to move
- Rocking horse stance
- Bounding digital pulses
- Heat of the whole foot and coronary band
- Painful trembling
- Painful to hoof testers
- Tachycardia
- Breathing hard

Most Commonly occurs in both “FRONT FEET”

Normal Hoof Radiographs

<table>
<thead>
<tr>
<th>Palmar angle (PA)</th>
<th>Laminae thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Radiographic Hoof Parameters
Radiographic Hoof Parameters

- Sole Depth
- Medial lateral Alignment
- Sinking

Digital Venography

Procedure: contrast is injected into the lateral palmar digital vein of the limb being analyzed and a series of radiographs are taken.

"Digital venography allows evaluation of digital perfusion in the standing horse"

The coronary plexus, dorsal lamellar vessels, circumflex vessels, terminal arches and heel perfusion is all assessed by digital venography for vascular abnormalities.

Treatment for Acute Laminitis <72 hr

- Inflammation
  - NSAID’S- Phenybutazone (Bute)
- Enzymes
  - Ice- slows down enzymatic reactions and decreases inflammation
- Other medications: Acepromazine, DMSO, etc..
- Footing
  - Support- deep soft sand, foam
- Shoeing- decrease the pull of DDFT and strain on laminae
  - Pads, increase PA (wedge), move breakover, rolled branches

Treatment of Chronic Laminitis >72 hr

- Surgical
  - Hoof wall resection
  - Tenotomy and De-rotation
- Medical & Mechanical
  - Bute
  - Footing
  - Shoeing

Shoeing Options

- Heart Bar
- Wooden Shoe (Clog)
- Reverse Shoe
- Full Rocker “Rail Shoe”
- Wedge
- Ultimate

In considering hoof care in horses with chronic laminitis, there are 3 goals for therapy:

- Stabilize the distal phalanx within the hoof capsule
- Control pain
- Encourage new hoof growth to assume the most normal relationship with the distal phalanx as possible.

Dr. O’ Grady
Conclusion

- Laminitis is a medical Emergency- the sooner treatment begins the better chance for recovery.
  - Each case is unique
- Treatment depends on the cause. In many cases the cause remains unknown.
- A good Veterinary Farrier Relationship is important for management/treatment of a founded horse
- Laminitis is a devastating disease that is not fully understood and can be frustrating and expensive to treat.

References


Questions

...