



# LAMINITIS WEST CONFERENCE

November 1, 2008 Monterey Conference Center

# Facts about laminitis

- 33% of horses will experience a laminitic episode!
- #2 cause of death in horses!
  - ▣ #1 cause is (you guessed it) colic



# Causes of laminitis

- Endocrinopathic
  - ▣ Cushing's: dysfunction of pituitary
  - ▣ Equine Metabolic Syndrome: hyperinsulinemia
  - ▣ Glucocorticoid Excess: iatrogenic (dex, azium, triamcinolone, vetalog) or endogenous (pheochromocytoma that leads to hypertension)



- Nutrition
  - ▣ Fructans present in grasses: fermentation of CHO's in hindgut by strep bovis and equinus disrupt mucosal barrier leading to release of "trigger factors" of disease



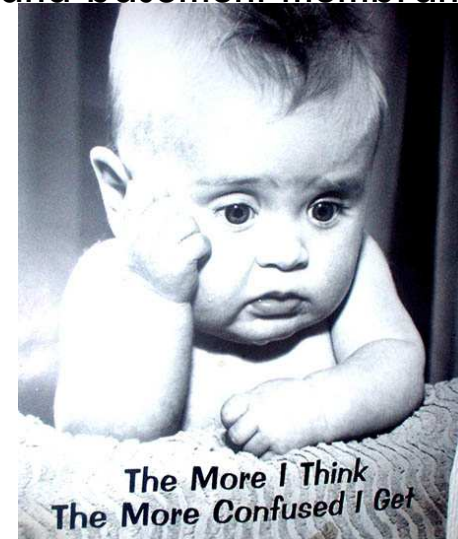
- Endotoxemia (retained placenta, peritonitis)

- Support Limb



# Proposed Mechanisms

- Enzymatic
  - ▣ Enzymatic remodeling of the epidermal lamellae and adjacent membrane is out of balance (MMP 2 and 9 implicated in normal remodeling)
- Vascular Theory
  - ▣ Ischemia/perfusion injury from oxygen free radicals due to endotoxins/exotoxins
- Inflammatory Theory
  - ▣ Endotoxins, exotoxins in circulation cause leukocyte extravasation into lamellar tissues and ROS cause tissue damage, MMP release, and basement membrane destruction
- Metabolic Theory
  - ▣ Based on insulin resistance
  - ▣ Disrupts normal glucose delivery to lamellae
- Biochemical Theory
  - ▣ “trigger factors”
  - ▣ no specific studies done



# Treatment

## □ Cryotherapy

- Studies have shown it prevents acute laminitis!
- Provides analgesia
- Hypometabolism
  - decreased glucose, oxygen needs of hoof tissue
- Vascular response
  - decreased amount of trigger factors due to vasoconstriction
- 5 degrees centigrade to be effective
- Cool fetlock and metacarpus
  - cool blood before it gets to hoof
- Dry ice packs don't get it cold enough!
- Horses lack cold nociception in their distal limbs
  - remember, they stand in snow!



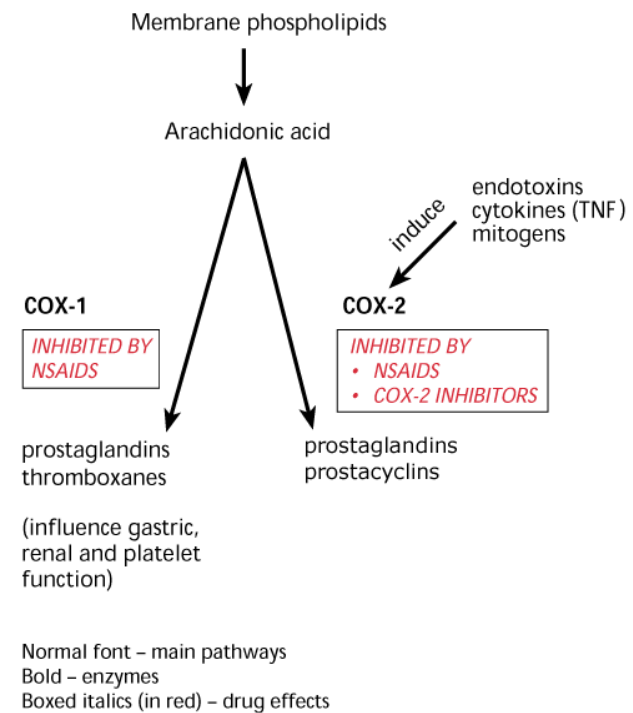
# Treatment

- DDFT tenotomy
  - Moderate-severe laminitis
  - Those that did not have tenotomy were more likely to be euthanized
    - Trend shows increased survival
  - Mechanically orients foot to increase blood supply
  - Takes pressure off P3
  - Decreases pain



# Treatment

- Treat the specific disorder
  - Colloids, hypertonic saline followed by appropriate crystalloids
  - COX-1 and COX-2s
  - +/- low dose banamine
    - Thromboxane inhibitor



# Treatment

- Epidural or spinal administration of analgesics
  - ▣ Like we use for hind limbs
  - ▣ Interest in opioid administration like this for forelimbs



# Future Treatments

- Local analgesia through iontophoresis pump drug through skin
- Capsaicin
  - ▣ from hot chilis
  - ▣ blocks some neuropeptides associated with pain
    - particularly chronic pain associated with laminitis
- Acupuncture
- Catheter with perineural blockade
  - ▣ Along the nerve innervating a particular area
  - ▣ Specific desensitization of the nerve in that area



# Secondary abscesses



- Occur 60 days-4 months after initial laminitis episode
  - ▣ Don't know why that time frame
- Can look just as sore as with acute laminitic episode
- Once laminitis is chronic, laminae don't have the same integrity as before the secondary laminae were lost
- Will never get the secondary laminae back

# Did you know?

- The risk of glucocorticoid associated laminitis is low
  - studies do not cause laminitis through exogenous administration of steroids
  - potential risks triamcinolone >dex>prednisolone
    - do not give more than 20 mg in competition horses (30 mg in racehorses)
      - published in literature!
    - Don't repeat in <2 weeks
    - Minimize number of joints treated
    - Consider obtaining owner consent!
- Benefits of laying down decrease pain (decrease HR) and increase digital perfusion as opposed to standing “fixed”
- Low sugar hay
  - Hay stems actually have more sugar than leaves!
  - Use lab analysis!!
  - There is no way to physically look at hay and know sugar content
- There is no evidence that supplements that promote hoof care help
  - unless the horse is possibly lacking essential nutrients in the diet



