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Understanding the Suspensory Apparatus

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Understanding the Suspensory Apparatus

• Suspensory Ligament
• Sesamoid Bones
• Suspensory/sesamoid attachment
• Distal sesamoidean ligaments
• Misc. other attachments
  — Extensor branch of the suspensory ligament
  — Inter-seamoidean ligament
  — Collateral ligaments
  — Annular ligament.

Load to failure began to group around two points
• Data was examined to determine why there were two clusters of data
Examination determined the difference to be Exercise Status. The primary site of failure differed between the groups.

Co-incident finding

Conclusion

Training Strengthens the Suspensory Apparatus

Conclusion

Training strengthens the suspensory ligament faster (or better) than the sesamoid bones

Conclusion

Splint fractures occur as a result of excessive elongation of the suspensory ligament

Conclusion

Sesamoid fractures occur in a preferred Sequence, apical fractures are most common

Radiographic Proximal Sesamoiditis in Thoroughbred Yearlings
What is Sesamoiditis?
Literature definition is unclear and varied

71 Standardbreds
Radiographed every 3 mo. for 1 year
Clinical relevance of radiographic findings in proximal sesamoid bones of two-year-old standardbreds in their first year of race training.
Hardy J, Marcoux M, Breton L.
Department of Veterinary Clinical Sciences, Ohio State University, Columbus 43210.

Primarily followed changes over time during training
Progressed over time, …?
< 1mm. canals = soft tissue injuries to flexor tendons and suspensory ligament (66%)
Wide canals = Primary sesamoiditis (N=7) and associated with lameness
Common yearling findings; is this sesamoiditis?

• Why is it important?
  – Pre-sale radiographs
  – Have not been tested
  – Veterinarians are asked to predict implications on performance based on radiographs alone
  – Not unique to racehorses, same dilemma in show horses

Hypothesis

• Primary Disease
  – Inflammation of the suspensory ligament attachment

• Secondary to inflammation
  – Radiographic changes, luscencies within the bone, at the abaxial margin
  – Perhaps similar to the distal sesamoid bone
Ultrasound Exam, Important Tool

• Active vs. Inactive
  — Fluid or fibrous tissue
• Degree of Damage
• Contour of the bone
• Size of the ligament

• Very good tool for making close decisions

We needed to document what was important about *sesamoiditis*, as seen on radiographs?

• We need to predict the clinical implications of the radiographic findings
• If it causes lameness it is difficult to treat and there is no surgical help options
  Purpose of the study: to help us predict the implications of radiographic changes on the horse’s race career

• Determine the variations in radiographic changes in the sesamoids of Thoroughbred yearlings
• Document the performance of these horses as 2 and 3 year
old racehorses and compare them to age matched sibling controls

• Benefit - Uniform population, controls and subjects subjected to similar exercise stress

Materials and Methods

• 487 yearlings (5496 sesamoids)
• Pre-selected for absence of gross clinical enlargement
• Survey radiographs taken to determine suitability for purchase

Defining lesions to be examined

Approach

• Eliminated the diagnosis and categorized what we saw by the radiographic finding
• Looked at radiographic findings one at a time

Vascular Canals

Categorizations

1. No evidence of linear defects representing vascular canals
2. 1 - 2 uniform linear defects ≤2mm in width
3. > 2 uniform linear defects ≤2mm in width

Categories 1 through 3 were *statistically identical* and were therefore used as controls

1. No evidence of linear defects representing vascular canals
2. 1 - 2 uniform linear defects ≤2mm in width
3. > 2 uniform linear defects ≤2mm in width

- **Radiographic changes in Thoroughbred yearlings. Part 1: Prevalence at the time of the yearling sales.**
- **Kane AJ, Park RD, McIlwraith CW, Rantanen NW, Morehead JP, Bramlage LR**

Definition of an abnormal canal
• Do you allow for differing shapes to the entrance into the bone.

• Spike – Yes
• Kane - No
• Spike 19%
  — Incidence
  — Affects performance
• Kane
  — Incidence 79%
  — Does not affect performance

N = 487
(horses could be in only one canal category, but could have additional contour or luscency categorization)

Treatment
• Improve circulation
  — Decrease venous obstruction
    • Isoxuprine
  — Reduce platelet adhesiveness
    • Aspirin
    • Pentoxyphyline

Prognosis

• Better in immature horses
• Depends on original insult
• Reduce exercise if acute inflammation or U/S damage
• May be permanently affected depending on severity
• No surgical help
• U/S can help define