Diagnosis of Lameness in Feedlot Cattle and Approaches to Treatment of Infectious Joint Disease

Feedlot Management School Workshop
February 2017

Michael Jelinski DVM
Incidence of Feedlot Disease

- BRD: 9.4%
- Lameness: 5.9%
- Urinary: 1.1%
- Digestive: 0.7%
- Nervous: 0.17%
- Other: 1.5%
- Unknown: 0.62%
Impact of Lameness

- Significant cause of morbidity/mortality
  - animal welfare concerns
  - economic concerns
    - 28% of all treatments
    - 49% of euthanized animals
    - $200 + production costs
Lameness by Diagnosis

- Footrot: 45.7%
- Digital Dermatitis: 23.2%
- Joint Infection: 4.7%
- Injury: 4.7%
- Toe Tip Necrosis: 3.9%
- Lame unknown: 4.9%
- Laminitis: 0.3%
- Other: 12.6%
- +/- Digital Dermatitis: 23.2%
- Footrot: 45.7%

Lameness 5.9%
Joint Infection 4.7%
Lameness in Feedlot Cattle

- Multiple causes
- Can be difficult to treat
  - depending on cause and severity
  - economic considerations - (eg.) fractures
  - available facilities

★ Successful outcomes improve with an accurate diagnosis
Feedlot Lameness

- Cowboy Quiz
  - brief review of clinical presentations
Case 1
Case 1
Case
Case 1
Footrot

- Responds well to appropriate antibiotic therapy

🌟 failure of response within 3-5 days warrants reassessment of diagnosis
Case 2
Toe Tip Necrosis
Toe Tip Necrosis
Toe Tip Necrosis

- Separation of sole and hoof along the white line with the presence of necrotic tissue and lameness
- Affects recently arrived feedlot cattle (calves and yearlings)
  - moderate to severe lameness within 2-3 weeks of arrival but as early as day 0
  - outer hind claw most commonly affected but can involve any claws
Toe Tip Necrosis

- **Cause Still Debated**
  - mechanical abrasion/trauma considered most likely
    - due to abrasive footing – course concrete or metal flooring
    - cattle scrambling on these course surfaces
    - animal temperament appears to be a factor
Diagnosis and Treatment

- Lame with no visible swelling
  - 1-3 weeks after arrival
  - generally have a fever >104.0
  - examination of foot +/- hoof testers

- Many cases appear to respond to antibiotics alone
  - tipping toe to promote abscess drainage may help
  - high mortality (75 percent) in cases that don’t respond favorably to antibiotic therapy
Toe Tip Necrosis
Block on Opposite Claw
Case 3
Case 3
Trauma

Fractured femur
Trauma

- Common in feedlot setting
  - riding injuries in pens
  - handling injuries (reimplanting, weight sorting)
- Heavier cattle more susceptible
- Treatment of fractures generally not practical
  - prompt euthanasia or on farm slaughter
Case 4
Case 4
Digital Dermatitis (Hairy Heel)
Digital Dermatitis

- Most common bacterial foot disease of dairy cattle worldwide
  - increasing prevalence in feedlots
- Highly contagious
  - environmental spread in wet feedlot conditions
- Poor response to systemic therapy
  - call for veterinary advice if you suspect this problem
Case 5
Laminitis
Laminitis

- Commonly observed in feedlot cattle
- Related to feeding a carbohydrate rich diet
  - periods of feed restriction may be more important than amount of carbohydrate in the diet
- No effective treatment – market these cattle in a timely manner
Case 6
Case 6
Case 6
Ergot

- Fungus (*Claviceps purpurea*) that grows on the seed head of cereal grains and grasses
  - cool wet spring followed by hot summer
- Produces toxin that damages and constricts blood vessels
Effects of Ergot

- Thickening of smooth muscle layer in large and medium sized arteries
- Peripheral vasoconstriction

★ Significant decrease in circulation
Ergot

- Extremities most often affected - hind leg lameness often the first sign
  - loss of tips of ears and tail
  - cold weather exacerbates symptoms

- Toxic threshold
  - = 1-3 kernals/1000
Joint Infections

- **Joint infections**
  - 2-3 animals/1000 head (higher in calves)
  - about 1 in 10 become chronic

- **Several causes**
  - Mycoplasma infections
  - Histophilus and other bacterial causes
  - extension to joint from severe footrot
  - extension from toe tip necrosis
Mycoplasma

- Mycoplasma is most common cause of joint infections in feedlot cattle (calves)
  - Important respiratory pathogen of recently placed feedlot calves
  - Spreads from lung to joints via the blood stream
  - Significant mortality in large feedlots - up to ¼ of cattle dying or euthanized may have Mycoplasma pneumonia/arthritis
Mycoplasma Arthritis

- Many calves will have a previous treatment history for pneumonia
- Sudden onset of moderate to severe lameness with joint swelling
  - 20 – 40 days on feed
  - +/- fever
  - large rotator joints (hip, stifle, hock, shoulder) most commonly affected
Treatment of Joint Infections

- Systemic antibiotic therapy
  - the only practical option in most cases

- Choice of drug
  - must penetrate into joints
  - maintain therapeutic levels for the duration of the treatment interval
  - multiple treatments?
Little data on appropriate dosing intervals for treatment of joint infections

- Synovial fluid pharmacokinetics of tulathromycin, gamithromycin and florfenicol after a single subcutaneous dose in cattle  
  
  **BMC Veterinary Research**  
  2015 11:26  
  Meredyth L Jones Kevin E Washburn, Virginia R Fajt, Somchai Rice and Johann F Coetzee

Pathogen dependent
Stifle Infection (Jan. 3)
Stifle Infection (Jan. 24)
Stifle Infection (Jan. 9)
Stifle Infection (Jan.31)
Poor Body Condition (Jan. 9)
Poor Body Condition (Jan 26)
Shoulder Infection (Jan.26)
Shoulder Infection (Feb.2)
Septic Hock
Septic Knee (Nov. 28)
Septic Knee (Jan.26)
Septic Knee (Nov. 28)
Treatment of Joint Infections

- **Drug selection**
  - Nuflor, Resflor, macrolides (Draxxin) and tetracyclines will distribute into joints
  - initiate early – multi day treatment recommended 1-2 treatments 4 days apart (more frequent for Oxy LA)
  - periodic culture and sensitivity testing to help with antibiotic selection

- **Penicillin, Excenel, Excede are ineffective for Mycoplasma joint infections**
Treatment of Joint Infections

- Treatment response tends to be slow but most improve with time
  - may take weeks (3 – 6) or longer
  - appropriate chronic pen care essential
    - bedding, access to feed and water
  - monitor closely – animals should be gaining 1 lb + /day over a month period
    - salvage slaughter or euthanasia as indicated
Why are outcomes often poor?

- significant damage to joint and surrounding tissue
- multiple joint involvement or extension along tendon sheaths
- often also have pneumonia
Why Are Outcomes Often Poor
Joint Infections of the Foot

- **Symptoms** – swelling at the coronary band

- Very common to have to euthanize these cattle due to treatment failure, severe pain
Septic Joint - Foot
Surgery

- If systemic therapy fails
  - surgery (amputation) can be an option for infections of the foot
  - only practical where proper restraint is available
  - only one claw is affected
Amputation

- Requires veterinarian
- Easy surgery to perform in field setting with proper restraint
- Very good outcomes when single claw involved
- Rapid resolution of pain
Tilt table
Septic Joint - Foot
Septic Joint - Foot
Surgical Procedure
Claw Amputation
Claw Amputation
Claw Amputation
Amputation
Day 22
Day 21
Summary

- Accurate diagnosis is essential
  - prompt, appropriate and aggressive treatment
  - pain management
  - allow time to recover but monitor condition

- More advanced treatment strategies in selected cases
  - amputation
  - regional limb perfusion
Regional Limb Perfusion
Regional Limb Perfusion

- Easy to perform with proper training
- Good success with chronic footrot