Digital Dermatitis, Treponemes and Beef Cattle

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Introduction

...This is Foot Rot!!!

Sudden onset of symmetric hard swelling and severe lameness, toe tipping, hardly any weight bearing
Interdigital skin splits within 72 hrs after onset
Extra tissue formed to close digital skin gap
Consequence: corns

Introduction

...this is NOT Foot Rot!
...this is Digital dermatitis...
Heel Warts!!!

Digital dermatitis, Heel warts, Hairy Heel Warts,
Cattle can become severely lame, but commonly not overnight.

Introduction

...neglected DD can turn into Foot Rot!!!

DD lesion
symmetric swelling due to a phlegmon that is part of Foot Rot

Introduction

...neglected DD is irreversible!!!

Chronic DD lesion with proliferation
like a “tumor”
The angle of the tip of the claw is very steep, toe horn has been worn off due to wrong weight bearing.
Introduction

...initial stages of DD
M1
smaller than quarter size

Just a tiny DD lesion

M2: ulceration
more than quarter-size

No lameness
Low grade lameness

Chronic DD is for Life!

• Chronic Sequelae of DD in seven groups
• DD is for “Life”
• We have not even begun to estimate the true losses caused by DD

DD risk factors

• Bad hygiene (mud, crowding)
• Season
• Mixing of cattle
• Certain breeds (Holstein X...)
• "pen effect"
• ...

DD starts earlier than receiving...

• Unloading DD...in 2003...

Chronic M4 and active M2
Pictures captured from a video by Dr. T. Noffsinger

Treponemes cause DD...

• Treponemes are anaerobic bacteria,
  they hate oxygen!
• Hundreds of other MO on top of lesions, but...
• Treponemes are always present
• on and in typical DD lesions

Early vs long-term DD damage – Beef cattle

Early season (May)
M2-Lesions; lameness: 1

Mid season (July); M2 lesions with chronic damage to feet; lameness: 2-3
Early damage

...early season M2 lesions

Early damage

...early season DD lesions

need attention!

Late damage

Increased depth of interdigital “pouch” compromises claw hygiene

M2, high severity HHE in layers
Lameness: 2-3

...late season M2 lesions

Topical treatment

- lift the foot to treat M2 lesions,
- Topical oxytetracyclin, less is more (<2g OTC per treatment)
- but no extremely acid pH...

3 Key Messages

- When you lift a foot to treat DD, you are too late!
  - treponemes penetrate deep into the epidermis and dermis and DD has long-term consequences

- The dynamics of DD are driven by chronic DD lesions,
  - not by active DD lesions (M2) alone

- Need for Integrated Prevention and Control of DD
  - from calves -> heifers -> lactating cows -> finisher beef cattle

Integrated Prevention and Control Strategy

- Want to achieve a
- Manageable State of Disease
- DD detection based on lameness is too late!
- It matters what is used for topical and group treatment!
More Messages...

- Treponemes go deep and hide – the “Race”
- Histology of DD

- Customized Footbaths: less can be more – the “Search”
  - Case studies, pH 3.5, cow passages and DD reservoirs

- DD Records for beef cattle – the “Tools”
  - Tools and trends for the “Manageable State of Disease”

- Chronic Sequelae of DD – DD for “Life”
- Chronic DD is highly inheritable – the “Destiny”
  - Schopke et al 2015

Integrated Prevention and Control Strategy

- Identify bodyweight with maximum prevalence (60-100 days before harvesting)
  - Count 60-90 days back in age
  - Start prevention and control there:
    - Hoof baths, chute records during processing
    - DD Pen Walks or DD Alley Checks,
  - Early detection, prompt topical treatment, risk factor management, trim if claw conformation problems are present,
  - Check and treat when transitioning cattle to different pens to reduce infectious pressure upon mixing of cattle

The Search

- Customized Footbaths: “Less can be more!”
  - Ongoing search for alternative, sustainable footbathing agents, because the
  - Wrong strategy -> Reservoir formation, chronicity
    - pH ~ 3.5-5.0 (cattle skin pH: 3.5 – 7)
    - Caustic chemicals, environmental and health problems
  - Cow passages and leg hygiene

Hoof bathing strategy

- Start standard protocol
  - 1x/week???, 1x/month???
  - Use 3% formalin or 2%-5% CuSO4, pH>3.5
  - “Ideal Hoofbath” dimensions, design…
  - Change after >300 cattle

- Monitoring: DD Pen Walks (1x/wk) to detect M2 early, treat promptly
  - Detect trends in numbers of M2 and M4
  - Special attention to the proliferative lesions
  - Identify Cattle type I, II, III

The Tools – need for records!

- DD Alley Checks

There is more…

- Webinars, Press releases – beef and dairy
  - Folder, posterrss
  - DD Check App, App, App…Models
  - Books…“Cattle Lameness”
  - ICAR claw health atlas:
  - Workshops (July 2016, Oberlin, KS)
  - dopfer@wisc.edu
  - FAPM website, UW-Madison, Wisconsin, USA
Thank you!

Awareness and...the many faces of an endemic claw disease

DD is here to stay!

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