Anaplasmosis: What it is and what it isn’t

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Anaplasmosis is reported in every state except Hawaii.
2013: Kansas Positive Counties
2015: Kansas Positive Counties

www.ksvdl.org “Disease Trend” button
Anaplasma marginale

• *Rickettsia* (gram (-) bacteria) infect red blood cells
Red blood cell destruction

Animal becomes infected

Spleen removes Anaplasma infected red blood cells

Anemic

Clinical signs
Clinical signs
only in Adults
>2 years age

Time from infection to clinical signs (prepatent period)
6-70 days
Average 28 days

Kocan; 2003, Audry; 2011
Clinical signs

- Adult cows/bulls found dead in the pasture/calving
- Lethargy
- Difficulty breathing (especially when moved)
- Aggressive behavior!!!
- Abortion: KSVDL— 4 herds in spring 2015
- Icterus (yellow membranes)/enlarged spleen

Fever
Weight loss
Constipation

Radostits, Smith
How does infection occur?

Blood transfer

✓ Some tick species
✓ Some fly species
✓ During gestation
✓ Needles, Tattoo pliers, etc.
Injection sequence using the same needle: Index cow, 2% *A. marginale* parasitemia
Became infected
All ages of cattle can become infected

Younger animals are more resistant to infection
“inverse age immunity”

Kocan; 2003, Aubry; 2011
All recovered animals will remain lifelong carriers!!!
Lifelong carriers will not experience clinical Anaplasmosis in subsequent years.

Viseshaual; 2000, Kocan; 2003
Life-long carriers

Are the source of infection for other animals, but…….

Difficult to eliminate the carrier state, and…….
If remove lifelong carrier state: these animals will be

Susceptible to CLINICAL Anaplasmosis if re-infected in subsequent years

Anaplasmosis is not...

- A bacterial disease.
  - It is a Rickettsial disease in which the pathogen must parasitize red blood cells to survive.
  - This disease has a very narrow choice for therapy

- A uniform disease caused by a consistent parasite.
  - There are different serotypes which originated from different areas of the country.
  - Research tells us that the ability to cause disease and the response to therapy may be quite different for the different serotypes.

- A disease that goes away if the animal survives clinical disease.
Anaplasmosis is...

• A disease with different clinical outcomes based on the age of cattle infected.
• A disease that can be spread in multiple ways.
  – Ticks are a host where the male tick can be a carrier in which the disease replicates
  – Flies can pass the disease by mechanical means through carrying infected red blood cells between cattle.
  – We can spread the disease through fomites such as injection needles, dehorners, and implant needles.
Anaplasmosis is...

• A disease for which some of our thinking has been informed by older studies that used relatively insensitive tests.

• A disease with limited data related to the efficacy of treatment and control programs.
Thank you

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Kansas State Veterinary
DIAGNOSTIC LABORATORY
Icterus

Icteric eye

Normal eye

Icteric vulva