Pasture Diseases 101

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Outline

- Objective: A brief overview of the clinical signs and identification of some of the diseases we are likely to encounter on pasture
  - Art of Diagnosis
    - Classifying diseases by system
    - Classifying diseases by class of animal
  - Diseases of the Digestive System
  - Diseases of the Respiratory System
  - Other Systems: Nervous, etc.

Diagnosis by Pattern Recognition

- The “Aunt Minnie” method
- Heavily dependent on experience
- May jump to wrong conclusions

Diagnosis by “Decision Tree”

- A pathway is created for diagnosis and treatment by an “expert”
- A good method for inexperienced or novices
- Has to be logical and include most of the common scenarios
- Treatment protocols would be one form of decision tree pathway

Diagnosis by Deductive Method

- From clinical signs and setting we can create a short list of possibilities
- With more detailed examination of animal we may be able to narrow this list down
- First step is to narrow down the diagnosis to the level of system involvement

Classifying Diseases by Systems

- Digestive
- Respiratory
- Nervous/Metabolic
- Reproductive/Urinary
- Integumentary (Skin/Eyes)
- Musculoskeletal
- Generalized

Class of Animal as a Clue

- The age and class of animal helps us to narrow down our list of potential diseases significantly
- The causes of diarrhea in a young calf and in an adult cow differ significantly
- Lactation and pregnancy status, age, breed, and production stage can all dramatically influence our list of "rule-outs"

Physiological Events That Change Disease Probabilities in Calves

Change from a "simple stomached" animal to a ruminant.

Decline of immunity calf received in colostrum.

Bottom Line

Class of cattle affected helps determine likely diagnosis and therefore course of action.

One pasture, most sick cattle occur randomly and no pattern is noticeable.

Yet pattern of sickness and mortality is most important and determines severity of situation.

Classifying Diseases by Class of Cattle

- Calves < 1 month of age
- Calves > 1 month of age
- Yearlings
- Cows
- Bulls

Clinical Signs associated with Digestive System Disease

- Diarrhea
- Scant feces or absence of feces
- Dehydration
- Colic (abdominal pain)
- Abdominal distension
- Distension of rumen (bloat)

Digestive System

- Calves
  - Viral diarrhea (< 1 month of age generally)
  - Coccidiosis (2-4 months of age)
  - Bovine Viral Diarrhea Virus (BVD)
  - Salmonellosis
  - Abomasal Ulcers

Viral Diarrhea of Young Calves

- Common cause of diarrhea
- Viruses shed by majority of adults
- Disease is most common in calves from 5 days of age to one month of age
- Pale yellow watery feces
- Dehydration
- May be accompanied by acidosis

Dehydration in Calves

- 6-8% Dehydration: Sunken eyes, skin tent persists for 2-4 seconds
- 8-10% Dehydration: Eyes markedly sunken, skin tent persists for 6-10 seconds
- 10-12% Dehydration: Gap between orbit and eyeball, Skin tent persists for 20-45 seconds
- Treatment: Fluids, Fluids, Fluids!

Acidosis

- Drop in blood pH caused by loss of bicarbonate in feces
- Mental depression
- Muscular weakness, difficulty walking
- Reluctant to suck

Acidosis

- May progress to coma
- Rapid respirations may be confused with pneumonia
- May not be severely dehydrated
- Treatment: Aggressive oral electrolytes or IV fluids with bicarbonate

Coccidiosis

- Beef calves after weaning
- Calves 2-4 months of age
- Diarrhea with mucus and blood
- Blood may be dark and tarry or fresh
- Severe straining
- May cause rectal prolapse
- Often not systemic involvement

Treatment of Coccidiosis

- Often spontaneously recover
- Case fatality rate is low
- Oral electrolytes if dehydrated
- Oral sulfa boluses may be used
- We are unsure if any antibiotics actually significantly improves outcomes

Salmonellosis

- Most common in calves under 12 weeks of age
- Can occur in any age of cattle
- Profound depression
- High fever
- Fluid diarrhea +/- blood, straining
- Putrid smelling feces, severe dehydration
- High case fatality rate

Salmonella “look alikes” in calves

- Coccidiosis
- Acute intestinal obstruction
- BVD virus

Bovine Viral Diarrhea

- Virus is widespread in Western Canada
- Infection of pregnant cow can result in a variety of syndromes such as abortion, infertility, weak calves
- Disease in adult cows is usually mild
- Calves infected “in utero” between 40-120 days of age become persistently infected with the virus

Primary BVD

- BVD infections in an immuno-competent animal are often unremarkable
- May get transient diarrhea for a few days but often animal recovers and becomes immune
- However, virus can cause significant immunosuppression
- May allow other infectious organisms to cause disease

Persistently Infected Animals

- Do not recognize BVD virus as “foreign”
- Will always be carriers and shedders of virus
- May be stunted, weak or still-born at birth
- May appear completely normal or might be obviously “poor doer”
- Are the major source of the virus in the environment

Mucosal Disease

- If exposed to the similar cytopathic strain of BVD virus or if the BVD virus mutates, calf will develop fatal Mucosal Disease
- Remember these calves were initially infected before birth!
- Mucosal disease usually occurs between 6 and 18 months of age
- However, can appear at any age

Mucosal Disease

- Off feed, depressed
- Nasal discharge, excessive salivation
- Erosions and ulcers in mouth
- Muzzle may have burnt or peeling appearance
- Fever, dehydration
- Ulcers and erosions evident throughout digestive tract
- Foul smelling, watery diarrhea +/- blood
- Ulcers around hooves
- Often die within a few days

Chronic form of Mucosal Disease

- Chronic weight loss
- Intermittent bouts of diarrhea
- Intermittent bouts of pneumonia
- Chronic lameness
- May die of pneumonia or some other disease because of weakened immune system

Control of BVD-Mucosal Disease

- Vaccination (Pre-breeding MLV!)
- Eliminate carriers
  - Blood samples tested for presence of virus
  - Skin biopsy (ear notch)
- Avoid adding cattle from unknown sources to herd during early pregnancy risk period (especially calves)

Abomasal Ulcers of Calves

- 85% occur in calves < 2 months of age
- Abdominal distension
- Colic (Abdominal pain)
- May have “tarry” feces if ulcer is bleeding
- May suddenly die if ulcer perforates
- Difficult to diagnose and treat
- Prognosis poor

Abdominal distension in calves

- Abomasal torsion
- Abomasal ulcers
- Intestinal accident
- Peritonitis
- Enteritis
- Severe naval infections
- “Milk overload”

Digestive System Diseases

- Yearlings
  - Bloat
  - BVD virus
  - Hardware Disease
- Cows and Bulls
  - Bloat
  - Hardware Disease
  - Johne’s Disease (Cows and Bulls)

Frothy Bloat

- Creation of froth in rumen from proteins in legume pastures (alfalfa)
- Suddenly dead
- Obvious distension of rumen
- Upper left side most enlarged
- Entire abdomen swollen
- Discomfort, colic, diarrhea
- More severe cases have respiratory distress

Diagnosis/Treatment

- Pass stomach tube and no or little gas is released
- Foam or froth will be evident on tube
- Mild cases: Treatment with anti-foaming agent (Dioctol product)
- Cases that are in severe respiratory distress or go down:
  - Use knife to make a 10-20 cm incision high on the LEFT side

Free Gas Bloat

- Passage of stomach tube releases large quantities of gas
- Can be caused by “choke”
- In young calves <6 months of age may be related to vagus nerve dysfunction resulting in chronic bloaters
- These calves may need a permanent rumen fistula to prevent future episodes

Johne’s Disease

- Bacterial infection:
  - Mycobacterium avium paratuberculosis
- Waxy cell wall makes bacteria very resistant in environment
- Can survive in environment for over a year
- Transmission is fecal-oral route
- Excreted in feces, milk and colostrum
- Young calves infected early in life

Johne’s Disease

- Very slow progressive disease
- Infected animals may not show clinical signs until 4-5 years of age however they may be shedding organism into environment
- Weight loss despite good appetite
- Chronic watery diarrhea
- “Pea soup” diarrhea, no blood

Control of Johne’s Disease

- A long term process
- Very difficult to eliminate from herd
- Diagnostic tests fail to identify early infections!
- Annual testing of herd and elimination of positive animals
- Try to minimize spread of infection within the herd

Hardware Disease

- Relatively uncommon in cattle on pasture
- 90% of cases in cattle on prepared feeds
- Off feed, weight loss
- Mild abdominal pain
- Reluctant to move
- May lie down or rise with great care

Hardware Disease

- Defecation and urination cause pain and grunting
- Scant feces
- Low grade fever
- Mild bloat
- If foreign body perforates cardiac region may cause signs of heart failure
  - Brisket edema, enlarged jugular veins

Clinical Signs Associated with the Respiratory System

- Abnormalities in rate, depth and ease of breathing
- Mouth breathing, grunting, rapid respiration
- Can also be caused by
  - Cardiovascular disease
  - Anemia
  - Nervous system diseases
- Coughing
- Nasal discharges: pus, blood, clear
- Fever and depression often associated with bacterial infections of lungs

Respiratory System

- Calves
  - Pneumonia (bacterial/viral)
  - Acidosis
- Yearlings
  - Pneumonia (bacterial/viral)
- Cows, Bulls
  - Atypical Interstitial Pneumonia (AIP)

Enzootic Calf Pneumonia

- Cause: Combination of viruses and bacteria
- Primarily a disease of housed dairy calves
- Can occur in young beef calves
- Viral infection often predisposes calves to infection with bacteria (BVD, BRSV)
- Usually <3 months of age
- Outbreaks may occur with viral infections

Clinical Signs of the Group

- Some calves are “off feed”, gaunt
- Breathing with an abdominal lift
- Or shallow rapid breathing
- Some coughing in group
- There may be a dead calf in the group as well

Individual Signs

- Large proportion of affected calves have a fever
- However, it is usually only slightly above 40° C
- As bacterial complications progress:
  - Fever, dyspnea and toxemia are more severe

Beef Calves on Pasture

- Index case is usually a dead calf
- Selection of additional sick calves is difficult
- Calves are difficult to catch and may go untreated
- May have to mass treat or temp and treat "hot" calves as a group

BRSV Pneumonia

- Sudden onset of acute pneumonia in 80-90% of a group of calves (also occurs in weaned calves)
- Severe viral pneumonia
- Calves mentally alert, mild fever
- Can rapidly become worse with mouth breathing and expiratory grunts
- Death may occur in 2-4 days despite therapy

Atypical Interstitial Pneumonia

- Fog Fever
- Within 4-10 days of moving adult cattle from dry to lush pasture in autumn
- Tryptophan in forage is converted to lung toxin
- Often a group of cows will be affected

AIP Clinical Signs

- Severe respiratory distress
- Labored breathing
- Mouth breathing, frothing at mouth
- Grunt on expiration
- If cattle are forced to walk, they often die
- Treatment is unsatisfactory
- Prognosis is poor

Clinical Signs Associated with Nervous System

- Downers, paralysis
- Circling
- Head pressing
- "Stupid" or agressive
- Blind
- Convulsions ("Funky chicken")

Nervous System/Metabolic

- Calves
  - Meningitis
- Yearlings, Cows
  - Polio
  - Lead poisoning
- Cows
  - Polio
  - Grass tetany / Milk fever

Polioencephalomalacia

- Sporadic disease of yearlings and adult cattle
- Sudden blindness, staggering
- Head pressing, tremors of head and neck
- Ear twitching, convulsions
- Recumbency and death

Polio

- Has been associated with high concentrations of sulfates in water
- Range cows where waters become concentrated during summer months
- Sulfates usually higher than 2500-3000 ppm
- Responsive to treatment with thiamine if treated early in course of disease

Clinical Signs associated with reproductive/urinary tract disease

- Abnormal urine: blood, pus, “red urine”
- Abdominal pain
- Weight loss
- Hunched back
- Abnormal vaginal discharges
- Fever

Reproductive/Urinary

- Yearling steers/Bulls
  - Water-belly
- Cows
  - Metritis (Uterine infection)
  - Bladder/kidney infections

Water belly (Urolithiasis)

- Primarily in feedlot steers but can occur in range cattle and bulls (any age)
- Pastures with high levels of oxalate or silica
- Clinical signs: Kicking at belly, sawhorse stance, straining, grunting
- Windshield wiper tail
- Area around rectum may be swollen
- If urethra ruptured: evidence of urine under skin around prepuce
- Prognosis is poor if bladder ruptured

Metritis (Uterine infection)

- Often occurs within a few days of calving
- After retained placenta or difficult calving
- Cow is depressed, off feed, febrile
- Hunched back, smelly vaginal discharge, straining, +/- diarrhea
- Weight loss, gaunt
- Treatment = systemic antibiotics

Musculoskeletal system

- Calves
  - Selenium/Vit E deficiency
  - Blackleg
  - Arthritis
- All (Calves, yearlings, cows, bulls)
  - Foot rot and complications
  - Trauma, injuries

Integumentary (Skin/Eyes)

- All (Calves, yearlings, cows, bulls)
  - External parasites
  - Pink-eye
- Cows/Bulls
  - Photosensitivity
  - Cancer-eye

Conclusions

- Identifying the system involved is an important step in making your diagnosis on pasture
- Sometimes this can be difficult and confusing
  - Eg: Acidosis may present as nervous disease
- The class of animal affected is another important clue in narrowing down the list of possibilities
- Developing a treatment protocol with your local veterinarian is an excellent way of creating a “decision tree” for triaging cases