Common Diseases of Sheep and Goats

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Overview

• GI Parasites
• Urolithiasis
• Pregnancy Toxemia
• Listeria
• Polioencephalomalacia
GI Parasites

- *Haemonchus contortus* → barber pole worm
- FAMACHA
- Multiproduct treatment for individuals
Urolithiasis
Urolithiasis

• Very common
• Life-threatening → recognize & treat early
• Males, especially castrated males
• High protein diet, diet high in phosphorus, dehydration...
• Urethral process &/or sigmoid flexure
• Struvite, calcium carbonate?
Urolithiasis

Clinical Signs

- Restless, tail switching, painful, dribbling urine or anuria
- Urethral pulsations without urination
Urolithiasis

Clinical Signs

• Restless, tail switching, painful, dribbling urine or anuria
• Urethral pulsations without urination
• Ventral & preputial edema → ruptured urethra
• Pain may subside, gradual abdominal distension & depression → ruptured bladder
Urolithiasis

Diagnostics

• +/- Blood chemistry
• Radiographs
• **Ultrasound examination (prognosis)**
  • With urethral pulsation without urination
  • Examine kidneys for nephroliths
Urolithiasis

Treatment

• EMERGENCY!
• Amputation of urethral process
  • High recurrence rate
• Urethral catheterization
  • Be cautious → urethra friable
• Walpol’s Solution
  • pH 4.5
  • U/S-guided cystocentesis, 30-50 mL Walpol’s lavage & leave
  • Urine flow in 24-36 hours, normal voiding 3-5 days
Urolithiasis

Treatment

• Salvage
  • Urethrostomy or penile amputation → temporary

• Breeding animals or pets
  • Tube cystotomy
  • Bladder marsupialization
Urolithiasis

Tube Cystotomy

- Foley (16-24 Fr.) into bladder & exit catheter through ventral abdomen
- Clamp catheter ~day 4
- Normal urination for 1-2 days before remove
- Must be in at least 7 days
- Antibiotics, anti-inflammatories, urinary acidifiers
- $$$$
Urolithiasis

Bladder Marsupialization

• Primary or after failure of another procedure
• $$
1. Paramedian abdominal incision parallel to prepuce
2. Apex of bladder exteriorized and decompressed

3. Place stay sutures & incise between stay sutures
4. Second abdominal incision on opposite side of prepuce
5. Pull apex into the second incision by stay sutures

6. Suture bladder to abdominal wall
Urolithiasis

Prevention

• Females as pets
• Delay castration as long as possible
• Increase water intake
• Avoid excess protein (grain supplements, legume hay) in pets
• Ca:P ration of 1.5-2:1
• Urinary acidifiers – monitor pH
Pregnancy Toxemia
Pregnancy Toxemia

Metabolic disease of pregnant ruminants

Cause:
  • Abnormal metabolism of CHOs and fats in late pregnancy (last 2-6 weeks)

Predisposition:
  • Does carrying 2 or more fetuses
  • Lean (BCS < 2) or obese (BCS ≥ 4)
Pregnancy Toxemia

Pathophysiology of disease

• Rapid fetal development in late gestation causes rapid mobilization of fat stores to assure adequate energy
• Liver also increases gluconeogenesis to facilitate glucose availability to the fetus(es).
• Negative energy balance $\rightarrow$ increased mobilization may overwhelm capacity of liver $\rightarrow$ hepatic lipidosis
• At same time, ketone bodies produced and accumulated $\rightarrow$ leads to excessive ketone bodies in blood which increases susceptibility to pregnancy toxemia
Pregnancy Toxemia: Pathophysiology

Vicious Cycle

- Hypoglycemia
- Lipolysis
- Increased NEFAs
- Ketone formation
  - Ketones further suppress gluconeogenesis
  - Ketone bodies suppress appetite
- Resulting FFA mobilization suppresses liver function
Pregnancy Toxemia: Clinical Signs

May be vague initially
• Weakness, lethargy
• May separate from herd
• Mild ataxia
Pregnancy Toxemia

Clinical Signs

• Anoerxia
• Depression/lethargy
• Neurologic signs
  • Opisthotonos
  • Dropped head
  • Periodic convulsion
  • Apparent blindness
• Bloat
• Bruxism
• Frothy salivation
• Sweet, fruity odor to breath

• Recumbency
• Coma
Pregnancy Toxemia: Clinical Signs
Pregnancy Toxemia: Clinical Pathology

Decreased
- Glucose
  - 20-40 mg/dL
- Calcium

Increased
- SGPT
- SGOT
- BUN
- Creatnine
- BHBA
  - >3 mmol/L (x10.3=30.9 mg/dL)
- NEFA
Pregnancy Toxemia: Clinical Pathology

• Dehydration
• Stress leukogram
• Metabolic acidosis
• Increased ketone bodies in urine
• Blood ketones
Pregnancy Toxemia: Treatment

Efficacy of treatment depends on...
  • Timely and correct diagnosis
  • Early treatment

Fair prognosis early, poor once recumbent
Pregnancy Toxemia: Treatment

Treatment based on...

1. Eliminate negative energy source
   - Good quality hay & grain
     - Starch ferments to propionate in rumen
     - Propionate “Glucogenic” VFA
   - Oral propylene glycol: 2-3 oz PO BID
     - 3-carbon energy source
     - Glucose precursor
   - Parasite issues, etc.?
Pregnancy Toxemia: Treatment

Treatment based on (continued)...

2. Removal of factors that affect energy requirements (3 Options)
   1) Prolonged medical support of dam
   2) Induction of parturition
   3) Immediate Cesarean section
Pregnancy Toxemia: Treatment

Treatment based on (continued)...

2. Removal of factors that affect energy requirements (3 Options)
   1) Prolonged medical support of dam
   2) Induction of parturition
   3) Immediate Cesarean section
Pregnancy Toxemia: Treatment

Possible to save dam and fetuses

Poor prognosis for both dam and kids

Provide dextrose, fluids, calcium

  • IV dextrose infusions
    • 5-7 g q 3-4 hours, preferably CRI
    • 5% dextrose, 10-20 mEq/L of potassium, 25 mL of calcium borogluconate/L

  • 20-40 units of insulin (Humulin R)
    • Blocks hormone sensitive lipase
    • Dose to effect, monitor glucose
    • Approximately 4X/day or CRI
Pregnancy Toxemia: Treatment

Treatment based on (continued)...

2. Removal of factors that affect energy requirements (3 Options)
   1) Prolonged medical support of dam
   2) Induction of parturition
   3) Immediate Cesarean section
Pregnancy Toxemia

2) Induction of parturition
   • 10 mg of Lutalyse® in goats
   • 15 mg dexamethasone in sheep
   • Dam may not survive until parturition (36-48 hours)
   • Fetuses may be premature
Pregnancy Toxemia: Treatment

Treatment based on (continued)...

2. Removal of factors that affect energy requirements (3 Options)
   1) Prolonged medical support of dam
   2) Induction of parturition
   3) Immediate Cesarean section
Pregnancy Toxemia: Treatment

3) Immediate Cesarean section
   • Best prognosis for dam
   • Most common reported reason for C-section in small ruminants

Recovery of dam is often dramatic (within 24-48 hours)
   • Warn owners and be prepared to euthanize kids if premature
Pregnancy Toxemia: Prevention

Increase nutritional plane in last 6 weeks of pregnancy

Groups dams according to...
- Number of fetuses (ultrasound)
- Age
- Body condition

Prevent stress during pregnancy
Pregnancy Toxemia: Prevention

Breeding Management

- High fecundity associated with increased incidence
- Breed at appropriate age – often delayed in show does
- Show does are over-conditioned
- Cull older does
  - Increased incidence with age/parity
  - Most first parity cases are show/pets → over-conditioned
Pregnancy Toxemia: Prevention

Nutritional Management
- Begin with good quality forage
- BCS and feed accordingly
- Ultrasound
  - Pregnancy status
  - Singletons/twins/triplets
- Establish feeding groups
- Increase feed as needed for weather conditions
Listeriosis
Listeriosis

*Listeria monocytogenes*

- Ubiquitous in environment of farm animals
- May be shed by healthy carriers
- Shed in feces, tears, nasal secretions, uterine fluid, milk (zoonotic)
- Survive for months to years in soil, feces, contaminated feed
  - Improperly fermented silage (pH > 5.5)
  - Spoiled forages
    - Rotten vegetation
    - Bottom of hay bales
Listeriosis

Clinical signs

- Encephalitis
- Septicemia
- Abortions
- Mastitis
- Ophthalmitis

Usually occur as separate disease entities
Listeriosis

Clinical Signs

• Acute disease that progresses rapidly
• Usually unilateral, loss of function of multiple cranial nerves
• Recumbency, torticollis, opisthotonos
• Case fatality ~100% if untreated
Listeriosis

Diagnosis

- Typically based on clinical signs
- CSF may be helpful
  - Elevated protein & nucleated cells, predominately mononuclear cells
- Postmortem
  - CNS microabscessation
  - Neuronal necrosis
Listeriosis

Treatment

• **Antibiotic therapy**
  • Oxytetracycline
  • Penicillin
  • Florfenicol

• **Antiinflammatory therapy**
  • NSAIDs – flunixin

• **Supportive therapy**
  • Fluid therapy
  • Ophthalmic antibiotics if keratitis/conjunctivitis
  • Management of down animal

• Thiamine?
Listeriosis

Prevention

• Feed off of ground
• Feed square bales or clean around round rolls of hay
Polioencephalomalacia (PEM)
Polioencephalomalacia (PEM)

Severe disruption of cerebral energy metabolism

Accumulation of sodium and water

Edema, swelling, pressure necrosis on cerebral neurons
PEM

Many causes

• Thiamine deficiency
• Sulfur toxicosis
• Sodium toxicosis & water deprivation
• Lead toxicosis
Clinical Signs

- Usually bilaterally symmetric
- Develop rapidly & often progress
- Wondering aimlessly
- Become recumbent
- Central blindness
- Opisthotonus
- Muscle tremors
- Extensor rigidity
- Convulsions
- Nystagmus
PEM

Diagnosis

- Most commonly signalment, history and clinical signs
- Rapid response to thiamine therapy
  - Bloodwork – usually unrewarding
  - CSF – mild increases in protein and mononuclear cells
PEM

Treatment

- **Thiamine hydrochloride**
  - Immediate thiamine replacement (10 mg/kg) IV slowly
  - Continue thiamine therapy for several days at 10 mg/kg SQ/IM q 3-6 hours
  - Improvement often observed within 6-24 hours
  - Frequency can be slowly reduced

- **Mannitol 20%**
  - 1-2 g/kg IV
  - Followed by dexamethasone (1 mg/kg) 3 hrs later
PEM

Prevention

• Adequate good quality roughage
• Slow adaptation to dietary changes
• Preventing ruminal acidosis
• Avoiding phytothiaminases
  • Bracken fern, horsetails, etc
Questions?
Caseous Lymphadenitis (CL)

- *Corynebacterium pseudotuberculosis*
- Usually external abscesses in skin or LNs
- Lives in soil for > 1 year
Caseous Lymphadenitis

Diagnosis

• Culture
• Necropsy
• Blood test

Treatment

• Complete surgical excision best
• Isolate for treatment – do not open in environment with other goats
• If draining, flush with Nolvasan or iodine
• Cull!
Caseous Lymphadenitis

Control & Prevention

- ID & cull affected animals
- Avoid skin injuries
- Good hygiene
- Purchase from CL-free herds/flocks
- Vaccination?
  - Do not vaccinate naïve herds