Streptococcus equi equi: Fact and Fiction: “Strangles” and Related Diseases

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Streptococcus: The Organism

**Streptococcus equi var equi**
(Very similar to Strep equi var zooepidemicus)

Highly contagious Gram Positive Aerobic Bacteria

Spread via nasal + oral secretions

Produces widespread purulent lymphadenitis of the head and neck

Affects equine only (horses, donkeys, mules, zebra)

Incubation: 3-21 days

Typical Duration of Clinical Signs: 7-14 d

“It’s a SNEAKY bacteria!”
Typical Presentation

Classic Clinical Signs:
- Nasal Discharge
- Fever (often > 102 F)
  - Lethargy
  - Inappetance
- Lymphadenopathy
  - Submandibular
  - Other Areas

More Severe Cases:
- Eating Difficulties
- Breathing Difficulties
Typical Presentation:
Airway + Guttural Pouch
Detection & Diagnosis

- CBC/Chemistry
  - Non-specific
- Blood Titers
  - Measures Immune response from M-protein
  - Interpretation can be difficult
    * Recent infections or vaccinations
    * Immune Mediated Disease
    * Bastard strangles
Detection & Diagnosis

- Culture
  - Via sterile sampling
    • Aspiration, Guttural Pouch Lavage

- PCR
  - Highly Sensitive
  - Future Applications:
    • May all detection of specific “strains”
Atypical Infection: Guttural Pouch Empyema

• Guttural Pouch Filled with Pus
  – Disease Strains
  – Innate Immunity
• Requires Flushing, Antibiotics

• Potential for Chondroid Formation
Atypical Infection: “Bastard Strangles”

- “Occult” Infection
  - Internal Infection
    - Thorax
    - Abdomen

- History of Exposure
  - +/- Previous Clinical Signs
  - CBC/Chemistry (Bloodwork)
  - Fluid Sampling
  - Ultrasound!!!
    - Chest, Abdomen
Atypical Infection: “Bastard Strangles” & Antibiotics

Myth: Antibiotics can CAUSE “Bastard Strangles”

Truth: “Bastard Strangles” develops due to increased bacterial virulence and decreased host immunity

There is NO cause-and-effect relationship between antibiotics and atypical infection
Complications: Purpura Hemorrhagica

Antigen/Antibody Complexes

*Immune-Mediated Vasculitis*

(Inflammation of vessels)

Soft-tissue swelling

Kidney Damage

Clotting Abnormalities

Petechia/Ecchymoses
Other Complications:

• Ulcerative keratitis/panophthalmitis
• Septic arthritis/tenosynovitis
• Paravertebral abscesses
• Laryngeal paralysis
• Colic
• Agalactia
Rare Complications: Strep Myositis

- Bacterial defenses trigger auto-immune response
- Strep M-protein mimics Myosin Muscle Fibers
- “Confused” Antibodies attack muscles
  - Topline (epaxial) muscles most often affected
- Increased IgG, Muscle Enzymes
Persistent Infection

Carriers: Asymptomatic shedders

Strep organism can live >90 days in the guttural pouch

May result in repeat outbreaks

ID - Sterile Guttural Pouch Lavage ⇒ Culture/PCR
Treat - Systemic Antibiotics, Guttural Pouch Lavage
Quarantine - Strict Isolation, Dedicated Tools, Clothes
Re-test - Repeat GP Lavage
Vaccinations: To Treat or not to Treat?

- Any decision to vaccinate is always a Risk - Benefit Analysis
  - How likely is exposure?
  - How serious is the infection?
  - How effective is the vaccine?
  - How safe is the vaccine?
  - If treatment is necessary,
    - Is it likely to be expensive?
    - Is it successful?
  - Is prevention by other means practical?

- Less than 50% of U.S. equine veterinarians routinely recommend vaccination against Strep equi
- Strangles vaccination provides less protection than true infection
Vaccinations: To Treat or not to Treat

• Ft. Dodge’s Pinnacle IN Vaccine most widely used
  • Modified Live Strep organism - Intra-Nasal
  • Provides local immunity in nasal passages
  • Variable body-wide immunity
    • Via lymphatic system
• Relatively High Rate of Side Effects:
  • 1 in 27 have mild side effects: fever, lethargy, enlarged Lymph Nodes
  • 1 in 275 have more severe side effects

• Boeringer-Engelheim Strepvax II
  • Purified M-protein vaccine
  • 3 shot primary series
**Prevention:**
*Identify - Disinfect - Isolate*

- STOP all Movement on/off Ranch
- Quarantine cases/in-contact horses
  - “Dirty” pastures
- Rectal Temps
  - Fever before clinical signs
  - Use to further segregate horses
- Screening recovered horses**
  - Monitor carrier status
Premise Disinfection: Durability in the Environment

- Use dedicated clothes, tools, wheelbarrows for infected group
  - Disease best spread by nose-to-nose contact
  - Secondary spread by “fomites”
- Use footbath or shoe covers

DISINFECTION:

1. Pressure Wash - Remove all organic material
2. 10% Bleach Solution on all surfaces
3. Pressure Wash Again
4. Spread limestone on soil of contaminated pens