Parasites in Horses

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Parasitologist of Old
Modern Parasitologist
Wormers 40 years ago
Modern Wormers
General Considerations

Parasites are most successfully prevented through a combination of management and therapeutic strategies.

**Management**
- Decrease parasite burden in environment

**Therapeutic**
- Deworming with proper product at proper intervals
Parasite Prevention

- Adequate pasture acreage
- Compost manure
- Cleanliness
- Pasture rotation
- Mixed grazing (cattle and horses)
Pasture Rotation

- Infective larvae on pasture decreases greatly over the winter and also in hot, humid days of summer.
- Move horses from old, infested pastures to ones that have minimal numbers of infective larvae.
- Deworm prior to moving.
- Foals and young horses should go to cleanest available pastures.
Internal parasites

- The amount of clinical disease a horse will show depends on three factors:
  - Type of parasite involved
  - Number of parasites involved
  - Host defenses. Young and debilitated animals more susceptible
Internal parasites – Common signs

- Poor growth
- Weight loss
- Decreased feed efficiency
- Colic
- Diarrhea
- Pneumonia
- Death
Important Parasites in the horse

- Large strongyle
- Small strongyle
- Ascarid
- Bots
- Pin worms
- Strongyloides
**Strongylus vulgaris** – Large Strongyle

- Blood worm
- Most dangerous parasite of horses
- Causes thromboembolic colic
- Direct life cycle
- Larvae live in artery supplying blood to the intestines. Blood clots form which block blood supply to the intestine
Life Cycle

**STRONGYLUS** (large strongyles)

- **Eggs Passed in Feces**
- **Egg, L1**
- **L1 Free Living on Pasture**
- **L2**
- **L3, L4, L5**
- **Ingested by Horse**
- **Third Stage, Infective**
- **L5 Return to Lumen of Intestine**
- **L5 Penetrate Intestine and Migrate**
- **Adults Mature 6-11 Months**
Adult Large Strongyle
Damaged intestines
Larva in artery
Damaged arteries
Thromboembolic colic
Small Strongyiles

- Numerous species of strongyles
- Direct Life cycle
- Larvae life in gut wall of large intestine
- Cause damage to gut wall resulting in G.I. upset
Life cycle
Diagnosis of Strongyles

- Fecal flotation
- Necropsy
Strongyle egg
Treatment of horse strongyles

- Many products available – nearly all horse wormers are effective against adults in the GI tract
- Ivermectin, mixodectin, and fenbendazole effective against migrating larvae
- Check fecal samples for eggs to gauge success of worming program
Control of strongyles

- Use effective wormers routinely
- Avoid overgrazing pasture
- Use clean pastures for young animals
- Pile and compost manure
Strongyles

- No public health significance
Ascarids - Roundworms

- Parascaris equorum
- Disease of horses up to 2 years of age
- Direct life cycle
- Larvae migrate through lungs where they can cause pneumonia
- Build up in large numbers in the intestine
Ascarid – Life cycle

1. Ingestion

2. 2nd stage larva hatches and migrates, via circulation, through liver and lungs (7-14 days)

3. Larva returns to intestine via trachea and esophagus (mature 7-9 weeks)

4. Egg passes in feces

5. Eggs hatch in soil

6. 1st stage larvae move to areas where host will ingest

7. 1st stage larva ingested

8. 2nd stage larva hatches in small intestine

9. 3rd stage larva matures in small intestine

10. Egg is laid in feces

11. Egg hatches in soil

12. 1st stage larva moves to host

13. 1st stage larva ingested

14. 2nd stage larva hatches in small intestine

15. 3rd stage larva matures in small intestine

16. Egg is laid in feces
Ascarids – Clinical Signs

- Impaction colic – death
- Pneumonia
- Pot belly
- Unthrifty appearance
- Poor hair coat
Ascarid Impaction and Rupture
Ascarid in bile system of liver
Diagnosis of ascarids

- Clinical signs
- Fecal flotation
- Necropsy
Ascarid egg
Control of Ascarids

- Good sanitation
- Eggs live in environment for many years
- Avoid putting foals in same pastures year after year
- Regular worming of foals and young stock
Treatment of Ascarids

- Most common wormers are effective against ascarids
- If a foal has a very heavy infection it should be wormed with less effective products to prevent impaction
Parascarus equorum

- No public health significance
Stomach bots

- Insects – the adult is a fly, the larvae live in the horse’s stomach
- Flies lay eggs on hair, they hatch and penetrate into the mouth tissue, then migrate to stomach
- May cause stomach irritation and colic
Life cycle

GASTROPHILUS (horse bots)

1st larval instar

Larva emerges and passes on to stomach or small intestine

2nd larval instar

3rd larval instar attaches to mucosa of stomach or intestine

Pupa (in soil)

Larva passed
Bot fly and egg
Eggs on hair
Bots in stomach
Diagnosis of Bots

- See eggs on hair and mane
- Endoscopy of stomach
- Necropsy
- Knowing flies are in area
Treatment of Bots

- Because flies are insects, only wormers that are effective against insects will kill bots
- Ivermectin and moxidectin are effective
- Nits can be removed from hair before they hatch
  - Nit removal combs, pumice stones
  - Warm water with insecticide added
Public health significance

- Flies can lay eggs on human hair
- Larvae will hatch and burrow into skin
Pinworms

- Adult pinworms lay eggs around the anus
- Eggs cause irritation and horses will rub their tails against objects
- Controlled by most wormers
Pinworm – life cycle

**Oxyuris (pinworms)**

- **Egg:** Ingested with food or water
- **3-5 days:** Egg hatches in the gut
- **L-4 Larva:** Emerges to lumen
- **Attaches to mucosa:** of large intestine
- **Develops to L-4:**
- **Ingestion by horse:**
- **Larva hatches and penetrates mucosa:**

*Nature in 4-5 months*
Diagnosis of Pin Worms

- Egg masses in perineal region
- Tail rubbing
- Eggs in feces (rare)
- Adults in feces
Pinworm egg
Control of Pin Worms

- Thorough cleaning of stalls
- Fresh food and water
Pin Worms

- No public health significance
Thread worms

- *Strongyloides westeri*
- Infects young foals
- Larvae passed in mare’s milk to foals
- May cause diarrhea in young foals
- DOES NOT cause foal heat diarrhea
Thread worm
Can be free living in soil
Cutaneous larva migrans

- Larva can penetrate foal’s skin to cause infection
- May penetrate human skin and cause problems in people as well
Diagnosis of Strongyloides

- Fecal exam for larvae
- Fecal culture
- VERY rarely may see eggs
Stronglyoides egg
Treatment of Strongyloides

- Worm mare prior to foaling to prevent larval migration to udder
- Worm foals at 4 weeks of age
Control of Strongyloides

- Sanitation
- Keep stall dry to kill larvae