AZHAR ALI

Super Family:- Spiruroidea

Family:- Spiruroidae

This family involved the genera *Spirocerca*, *Thelazia* and *Habronema*. Major characteristic of this group is the coiled tail of the male. The life cycles are indirect involving arthropod intermediate hosts.

Genus:- *Habronema* conman name: Equine stomach worm

Kingdom: Animalia

Phylum: Nematoda

Class: Secernentea

Order: Spirurida

Superfamily :spiruroidea

Family: Habronematidae

G:Habronema

Habronemiasis (**also called summer sores, granular dermatitis, jack sores, bursati, and other terms**)

is a Complex parasitic disease of donkeys, horses, mules and zebras and is most commonly encountered in temperate, sub-tropical, and tropical regions . This disease is caused by the invasion of Draschia megastoma, H. microstoma and H. muscae nematodes. The pathogenic nematode larvae are transmitted by flies (houseflies, faceflies, and stableflies) while feeding on preexisting wounds or on moist mucus of

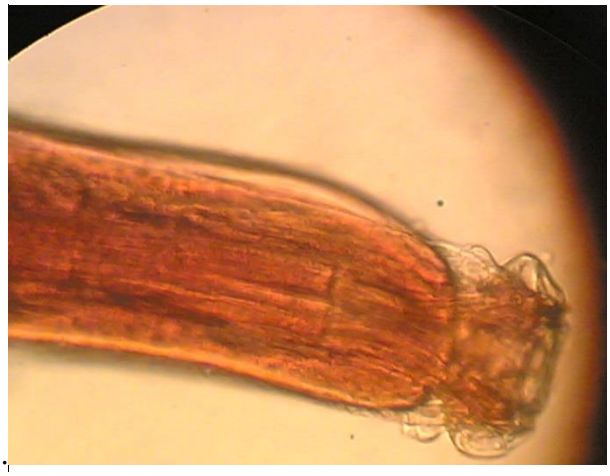
the equid's anatomy, including genialia, eyes, nostrils, lips, and prepuce . The most common aberrant forms (conjunctival and cutaneous hab-ronemiasis) are associated with the nematode larva being deposited in these areas and not completing its life cycle, with resultant signs probably associated with local hyper-sensitivity. Typical signs include non healing skin lesions, ulceration of moist areas, intense itching, and formation of exuberant granulomatous tissues . In the gastric form, nematode larvae are deposited near the mouth, are swal-lowed, and are able to mature into adults and produce eggs in the stomach of equids. The eggs are later excreted through the equid 's feces. This condition has a worldwide distribution .

Morphology:

Amajor characteristic of this group is the coiled tail of the male. The life cycles are indirect involving arthropoda intermediate hosts

Habronema megastoma is about 13mm. long has a funnel – shaped buccal cavity

H. musca , H.microstoma are larger 22-25 mm, and have cylindrical buccal cavity. The left spicule of H. musca is five time as long as the right one



the coiled tail of the male

Life Cycles of Habronema and Draschia spp

The distribution of these nematode parasites is worldwide. They can complete their life cycle only in equines (the primary host) and flies (the intermediate host). Adult H.muscae, H. microstoma, and D. megastoma are usually found within the stomachs of equines, earning the name stomach worms,and only rarely in the cecum or colon. Adult worms produce eggs mostly in the stomach of the primary host. Eggs move through the alimentary tract and are excreted through feces. Eggs are thin-walled and embryonated (40-50 um 10-12 um) and hatch quickly

after they are excreted. However, larvae may occasionally emerge while the eggs are in transit through the gastrointestinal tract .. The larvae are ingested by fly maggots (larval stage) that inhabit feces. The larvae molt twice within the fly maggots and develop into infective L3 larvae by the time the adult flies emerge from their pupal stage. The infective larvae are transmitted to primary hosts when flies are attracted to and feed on secretions or discharges from hosts' eyes, nostrils, mouths, vulvae, teats, wounds, and other openings. The development is weather/temperature dependent but may be as soon as 7-8 days. The stomach worm larvae migrate to the fly's mouth parts, and the infective L3-stage larvae "escape" while the adult fly is feeding, usually near the mouth, lips, or wounds of primary hosts (horse). The L3 larvae that are ingested by the horse are then able to complete their lifecycle . The larvae develop to adults in the stomach in approximately 2 months. Larvae that do not complete the migration to the stomach may cause granulomatous lesions in the skin, eye,and, rarely, viscera. When larvae are deposited in or near a wound or the eyes, cutaneous or ocular habronemiasis may result. In this case the L3 is unable to mature to an adult nematode, and the life cycle is not completed. Continued migration of L3 larvae results in a local inflammatory condition. Cutaneous habronemiasis can be very pruritic and may lead to self mutilation with resultant tissue necrosis and calcification of the third-stage larvae. This condition is poorly understood but may be associated with hypersensitivity to the L3 stages, particularly when adults are living in the stomach ;there may be a genetic susceptibility, as some horses are affected yearly .

Clinical signs and pathogenesis

H.microstoma(H majus) and H. muscae **cause little or no pathologic changes in the equine stomach. However, large Numbers may cause ulcerative and/or catarrhal gastritis**.

D. megastoma may produce very large "tumor-like" granulomatous masses (up to 10 cm in diameter) that contain adult worms and necrotic material. These Draschia lesions can, on rare occasion, interfere with the function of the pylorus and result in stomach perforation .

Cutaneous habronemiasis (summer sores) is caused by *Habronema* **larvae** which are deposited in the wound by infected flies .All three species of *Habronema* may be involved in the condition .

Pruritus may accompany either the cutaneous or **ocular form of habronemiasis**. Pruritus is evident when horses scratch and/or chew at the skin lesions. Lesions are usually reddish-brown, with occasional ulceration. They often are "greasy," serosanguineous, and contain yellow calcified "rice grain-like" material. Habronemiasis has a seasonal distribution, with occurrences predominately in the spring and summer and coinciding with fly activity. The condition usually regresses during the winter months .

Habronema spp larvae may also be associated with granular conjunctivitis . the lesion is seen on the inner canthus of eye.

Diagnosis :

1- The gastric infection is difficult to diagnostic some larvae or worms may be found gastric lavage through a stomach tube

2- Finding of non- healing reddish cutaneous granulomas, The larvae recognized by spiny knobs on their tails , may be found in material from those lesion

Treatment

1-Anumber of modern broad spectrum anthelmintic have activity against the adult worms in the stomach

2-Cutaneous lesions are best treated with ivermectin

3-The use of insect repellents has some benefit

4-cryo-surgery have been used in more chronic case