

# **Diseases associated with helminthes parasites**

## **Nematode diseases of the alimentary tract**

### **Parasitic gastroenteritis in ruminants**

The disease caused by specific nematodes which include,

Trichostrongylus spp.

Ostertagia spp.

Cooperia spp.

Nematodirus spp.

Oesophagostomum.spp

Toxocara spp

Strongyloides spp

which have direct lifecycle .

Epidemiology....

1-Infection mostly depend on season of the year which provided wet or moisture and low weather temperature thus Heavy rain fall, freezing and hot weathers kill the eggs and larval stages

2- The eggs of some worms contain trehalose, which acts as an antifreeze make them more resist.

3-- All ages of animals are susceptible specially those graze out door although indoor feeding animals may also infected .

4-Mix infection is easily occur and severe disease may depend on numbers of eggs and larvae.

5- the source of infection is mainly ingestion of contaminated food and water

### **Periparturient rise phenomena**

A depression in immunity to GIT infection occurs in animals before or at the time of parturition and reaches a peak 6-8 weeks after lambing or calving . This happens because priority is given to milk production over immune functions. As a result, animals specially ewes pass large numbers of worm eggs onto the pasture over a period of several weeks. This is known as the periparturient egg rise (PPER) and is an important source of pasture contamination

### **Resistance and resilience ...**

Is the ability of an animal to withstand **يقاوم** the damaging effects of parasitic infestation.it can be affected adversely by stress and nutritional deficiencies.

Pathogenesis.....it depend on the type of worm

1- inflammatory changes, a thickening of the intestinal mucosa and a stunting or flattening of the villi. Epithelial enzyme activity is reduced.moreover developing larvae distend the gastric glands and produce small white nodules on the mucosal surface,

2- malabsorption lead to diarrhea, weight loss and production deficits

3-Hypoproteinemia ,decrease Mineral absorption specially phosphorus resulting in reduced skeletal growth, bone density and mineralization

4- The elevated gastrin levels in abomasal infections impair reticulo-ruminal motility and slow abomasal emptying, leading to a stasis of ingesta and hence a reduction in feed intake

Clinical findings...

- 1- More severely affected animal pass dark green, or black, soft feces with dirty perianal region
- 2- There is profuse watery diarrhea some times occur resulting dry hair coat and dehydrated animals with sunken eyes and increase heart and respiratory rate
- 3- anemia is evident some times in sever infection and the mucosa are pale and dry
- 4- Submandibular edema is common, specially in ostertagiasis

Clinical pathology...

- 1-Microscopical examination of feces with fecal egg count
- 2- Estimation of plasma pepsinogen
- 3-Evaluation of hemogram for anemia

PM changes...

- 1-adults worm are present in abomasums or intestine depend on their sites
- 2-emaciation, dehydration, moderate anemia and evidence of scouring
- 3- In severe cases, the mucosa of the abomasum and upper small intestine maybe hyperemic and swollen, and le numerous raised nodules Which may be discrete or confluent forming a 'morocco-leather' appearance

Treatment...

- 1-Avermectins,( ivermectin, doramectin, and moxidectin) also known as the macrocyclic lactone anthelmintics produce flaccid paralysis of parasites by acting as an agonist of the neurotransmitter gamma-aminobutyric acid (GABA), thereby disrupting GABA-mediated central nervous system (CNS) neurosynaptic transmission. Thus it interfere with nerve transmission by opening chloride channels, 0.2mg/kg BW.S.c.
- 2-Benzimidazoles act by inhibiting tubulin polymerization after binding to tubulin and disrupt يعرقل nutrient uptake. such as
  - a-Albendazole, Oxybendazole, Fenbedazole, Oxyfenbendazol, at dose rate of 5-10mg.kgBW orally.
  - b-Thiabendazole 66-88mg/kg BW orally
- 3-Tetramisole and levamisole act by making tonic paralysis of the parasites ,at dose rate of 10-15mg/kgBW, orally.
- 4- Oxyclozanide is a salicylanilde anthelmintic act by uncoupling oxidative phosphorylation, thereby decreasing the availability of high energy phosphates such as ATP to the parasites, it is formulated as an oral drench containing oxyclozanide alone or in combination with levamisole hydrochloride (Levosan).at dose rate of 2.5ml/10kg BW orally suspension.

## **Ostertagiasis**

a parasitic gastritis caused by the nematode *Ostertagia ostertagi*, is the most important of the gastrointestinal helminth infections of animals specially cattle

### **Type I Ostertagiasis....**

This is a disease of young susceptible animals (suckling beef calves, dairy heifers, and stocker cattle) and sheep in the summer and fall months or in winter and spring. Infective larvae are ingested daily by young growing animals on pasture; the larvae migrate to the

gastric glands of the abomasum, grow, and become adults in about 3 weeks. These young adult worms then break out of the glands, creating substantial damage.

Clinical signs manifested by reduced growth and/or production, profuse diarrhea, rapid weight loss, submandibular edema ("bottle jaw"), increased mortality, anemia, and generally poor condition with a rough hair coat.

### **Type II Ostertagiasis....**

It occurs in yearling (or older) animals. It occurs in hot summer when the animal has acquired large numbers of inhibition-prone larvae.

Pathophysiology...

It causes functional changes in abomasal digestive physiology, which include a decrease in acid production due to loss of parietal cell function, which leads to decreased abomasal acidity (5-6 normally) and this will prevent the activation of pepsinogen to pepsin. Thereby bacterial growth will increase, leading to diarrhea and the absorption of proteins will decrease.

### **Hemonchosis in ruminants**

It is caused by *H. contortus* in sheep and goats and *H. placei* in cattle.

Pathogenesis... it is characterized by

1- the same as in ostertagiasis

2- Hemorrhagic anemia occurs due to severe sucking of the blood by the 4<sup>th</sup> larvae in the abomasum (0.05 mL of whole blood per worm were sucked daily)

### **Self cure phenomena....**

It is a sudden natural expulsion of adult *H. contortus* which may also eliminate incoming larvae. It occurs in sheep when a large uptake of infective larvae is superimposed on an established worm burden in a sensitized animal.

Clinical findings... characterized by

1- losses may occur due to animal deaths and reduced production.

2- Pale MM

3- muscular weakness

4- bottle jaw

Treatment...

1- broad spectrum antinematodes

2- Rafoxanid 10mg/kgBW orally

### **Strongylosis (redworm infestation) in horses**

The redworms (*strongyles* spp) are nematodes commonly found in the large intestine of horses and other Equidae. They include the large strongyles, *Strongylus vulgaris*, *S. edentatus*, and *S. equinus*, and the small strongyles *trichoneme*, *cyathostome*.

Pathogenesis...

1- In general strongyles spp cause large nodules in the wall of the cecum and colon  
Considerable hemorrhage may follow when these rupture to release the worm into the lumen of the intestine

2-The larvae of *S. vulgaris* are the most pathogenic, causing arteritis, thrombosis and thickening of the wall of the cranial mesenteric artery. Emboli may break away and lodge in smaller blood vessels, leading to partial or complete ischemia in part of the intestine, thus producing colic which might be fatal when necrosis and gangrene develop.

3- Other arterial lesions associated with migrating *S. vulgaris* larvae include aneurysm of the cranial mesenteric artery

4-migration in other parts of the body vessels were also reported such as iliac, renal, splenic,hepatic and coronary arteries.morover cerebrospinal nematodosis due to *S. vulgaris* invasion of the central nervous system have been reported .

5-Developing cyathostomin larvae causes inflammation of the cecum or ventral colon,with small ulcers, hemorrhages of varying sizes and excess mucus production. ,this leads to weight-loss, diarrhea and sometimes lead to colic due to intussusception.

Clinical findings...

1-Persistent low-grade fever 2-Poor appetite 3-Intermittent colic 4- Poor weight gain  
5- depression,6-diarrhoea

### **Oxyuris equi infection (Pin worm)**

Is a nematode that cause irritation of the peri-anal region(anal pruritis) of horses,causing them to rub and bite their tails,This can result in hair loss and sometimes physical damage to the tissues of the area.

Treatment...

Ivermectin 0.02mg/kg,orally