



WORMS



CAPILLARIA

Etiology:

This nematode inhabits the oral cavity, the crop and the intestines of birds. Raptors get infected due to the ingestion of infected prey (e.g. crows) or contaminated food.

Clinical signs:

Clinical signs may include dysphagia, anorexia and weight loss due to necrotic lesions in the mouth and in the digestive tract.

In some cases dyspnea may be noticed, but asymptomatic courses are described as well.

Diagnosis:

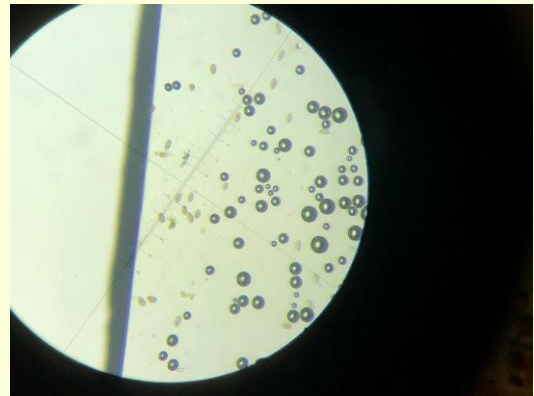
The double-operculated eggs are usually detected microscopically from oral lesions or within feces.

Treatment:

The infection may be cured with benzimidazoles (e.g. fenbendazole) or avermectins (e.g. ivermectin).

Prevention:

Hygiene and regularly fecal examinations for endoparasites are important for prevention.



Worm eggs in feces.

SYNGAMUS TRACHEAE

Etiology:

The worms typically inhabit the trachea and sometimes the air sacs, where they usually cause a marked inflammatory response.

Clinical Signs:

Dyspnea and voice change, head shaking, extension of the neck with open beak (gaspings) and death due to asphyxiation are possible signs. Large amounts of mucus may lead to coughing and unusual sounds from the upper respiratory tract (stridor).

Diagnosis:

Eggs may be identified in fecal flotation. Adult worms may be detected via endoscopic examination of the trachea.

Treatment:

Benzimidazoles (e.g. fenbendazole) or avermectins (e.g. ivermectin) are effective in most cases, but complications may be caused by dying worms that remain in the respiratory tract, leading to obstruction, inflammation and secondary infection.

Prevention:

Routine fecal screening and targeted deworming are recommended. As earthworms may harbor eggs of *Syngamus sp.*, exposure to earthworms should be limited as much as possible.

Bibliography:

L. R. Arent, *Raptors in captivity: guidelines for care and management*, Hancock House Publishing, 2007.
K. L. Bildstein and D. M. Bird, *Raptor research and management techniques*, Hancock House Publishing, 2007.
J. Chitty and D. Monks, *BSAVA manual of Avian practice - A foundation Manual*, BSAVA Press, 2018.

J. Chitty and M. Lierz, *BSAVA manual of raptors pigeons and passerine birds*, BSAVA Press, 2008.
B. H. Coles, M. Krautwald-Junghanns, S.E. Orosz, and T. Tully Jr., *Essentials of avian medicine and surgery, 3rd edition*, Blackwell Science Ltd., 2008.
J. E. Cooper, *Birds of prey - health and disease, 3rd edition*, Blackwell Science Ltd., 2002.
J. E. Graham, *Blackwell's Five-Minute Veterinary Consult: Avian*, Wiley-Blackwell, 2016.
M. Heidenreich, *Birds of prey - medicine and management*, Wiley-Blackwell Science, 2001.
R. Naisbitt and P. Holz, *Captive raptor management and rehabilitation*, Hancock House Publishing, 2004.
J. Samour, *Avian medicine, 3rd edition*, Mosby, 2016.
D.E. Scott, *Raptor medicine, surgery, and rehabilitation, 2nd edition*, CABI Publishing, 2016.
B. Speer, *Current Therapy in Avian Medicine and Surgery*, Elsevier, 2015.

Photo courtesy of:
Dr. Andrea Villa

Authors:
Dr. Andrea Villa (IAF Welfare WG);
Dr. Dominik Fischer, DipECZM (WPH),
University of Giessen.