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Case Report

Intestinal cestode infection of Raillietina species in a 9 weeks old broiler in Umuahia, Abia State, Nigeria - A Case Report

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ABSTRACT

This case report presents an intestinal cestode infection of *Raillietina* species in broilers. Live broiler birds that were 9 weeks old were seen to be infected with cestodes during a farm visit. Post mortem examination was carried out and samples of the intestines, live tapeworms and faeces were collected. On post mortem examination, the intestines were filled with whitish worms, the tapeworms were identified using microscopic examination as *Raillietina* species but no eggs of *Raillietina* species were observed following fecal examination. Although cestode infections with this species usually do not adversely affect humans following consumption, they are of economic importance as infections in birds can cause weight loss, growth problems and weakness. The essence of this report was to highlight and identify that cestode infections with *Raillietina* species can occur in broilers which is uncommon and the reason further investigation with microscopic examination was carried out following the negative result from the faecal examination

KeyWords: Broilers, Cestodes, Raillietina species.

INTRODUCTION

The domestic chicken scientifically designated as *Gallus gallus domesticus* is of great economic importance in Nigeria as it produces both meat and eggs. In recent times, it has now been recorded that many species of tapeworms infect domestic chickens especially those raised in the deep litter system due to ease of contact with the intermediate hosts (Reid & Mcdougald, 1997; Gamra *et al*., 2015). Infection with cestodes in poultry is not a fulminating disease with high mortality (Salam *et al*., 2010). However, the harm done due to the chronic process of infection severely affects production as it causes loss of body weight as well as symptoms such as enteritis, anemia, low production, nervous symptoms and death (Calneck *et al*., 1997; Gamra *et al*., 2015).

The gut of the domestic fowl is a predilection site or many cestode parasites, especially the tapeworms belonging to the genus *Raillietina* which are the most prevalent avian helminth parasites throughout the world (Rashid *et al*., 2019). *Raillietina* species inhabit the small intestine of the definitive host whereas their larval stage resides in several invertebrate intermediate hosts such as ants, beetles, houseflies, small wasps or termites (Butboonchoo *et al*., 2016). Three species of this genus are important parasites of poultry. *Raillietina echinobothrida,* which are mainly found in chickens and turkeys are the most important species in terms of prevalence and pathogenicity in poultry production (Permin & Hansen, 2003). In *R. echinobothrida* infection, the young forms of the parasite penetrate deeply into the mucosa and sub- mucosa of the duodenum of the host's intestine which results in the formation of nodules and hyperplasic enteritis at the site of attachment (Nandi & Samanta., 2010). *Raillietina tetragona,* which occurs mainly in chickens, guinea fowls and pigeons, causes the intestinal wall of the host intestine to be thrown into ridges of purplish colour and the intestinal mucosa sloughs off (Singh et al., 2006). *Raillietina cesticillus,* which is common in domestic chickens and commonly found in the jejunum, causes degenerative and inflammatory changes in the intestinal villi

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(Singh *et al*., 2006). Although *Raillietina* species from poultry are not contagious to humans, they are of economic importance as they can have an impact on the growth of birds as a result of weight loss.

CASE REPORT

Three live broiler birds were observed to be infected with tapeworms during a routine veterinary visit to a poultry farm following physical examination and they were passing out whitish worms with feces. A post mortem examination was carried out on the farm and samples of the intestines, live tapeworms and faeces were sent to the Department of Veterinary Parasitology, Michael Okpara University of Agriculture Umudike, Nigeria for parasitological identification. The farmer reported that the birds were 9 weeks old, the vaccinations were up to date and that the birds were dewormed the previous week to this infection. They were raised on deep litter system and the clinical signs reported were unthriftiness, dullness and consistent watery faeces

COLLECTION OF TAPEWORMS

Live adult cestodes were collected upon post mortem examination from the small intestines of the broilers and were washed in 9% phosphate buffered saline (PBS) and then sent to the department of veterinary parasitology, Michael Okpara University of Agriculture Umudike for parasitological identification.

COLLECTION OF FECAL SAMPLE

Fresh fecal samples were collected from infected birds and also sent to the department of veterinary parasitology, Michael Okpara University of Agriculture Umudike for identification of eggs.

RESULTS

GROSS PATHOLOGY

The post mortem examination of the sacrificed broilers revealed that the carcasses had ruffled feathers but overall apparently healthy. The intestinal lumen (duodenum and jejunum) of all the carcasses when cut open were severely filled with whitish worms. No attachment to the intestinal mucosa was observed as there were no exudates or hemorrhage seen.

PARASITIC IDENTIFICATION

The tapeworms were identified microscopically as *Raillietina* species. The scolex of the *Raillietina* species were round in shape with short and broad necks. The rostellum was armed with hooks and the sucker was also round in shape armed with hooks.

Figure I. Identification of the tapeworm as *Raillietina species*

Figure II. Affected birds on deep litter system of mangement

Figure III. Live worms expressed from the intestine of broilers

FECAL EXAMINATION

The faecal samples obtained were examined using saturated floatation and sedimentation techniques but no eggs of *Raillietina* species were observed in the samples.

DISCUSSION

Chronic cestode infection of domestic poultry can lead to massive economic losses. The morphological description of *Raillietina* species recorded in this case agrees with the findings reported by Gamra *et al.,* 2015 and Butboonchoo *et al.,* 2016. The examined birds at post mortem revealed no attachment of the cestodes in the intestinal lumen to the intestinal mucosa as there was no trauma observed as well as no hemorrhagic enteritis or exudates. This is in contrast with the findings of Calneck *et al.,* 1997 and Gamra *et al*., 2015. This could be as a result of the infecting species of *Raillietina* as some are relatively harmless and do not cause trauma to the intestinal mucosa of the definitive host. Gravid segments or eggs were not observed following faecal examination from infected birds. This could be as a result of the time of day the faecal sample was collected or the age of the tapeworms as only adult tapeworms shed gravid segments containing eggs in the faeces of the infected host.

Farmers are encouraged to not only treat tapeworm infestations but also have preventive measures in place to avoid contact of the birds with the intermediate hosts. Flocks at risk can be treated with specific taenicides (niclosamide or praziquantel), as most of these active ingredients are available as additives for feed or drinking water, or as tablets for oral delivery (Demis et al., 2015). Prevention of contact of birds with the intermediate hosts of tapeworms is the most important step in the control of tapeworm infestation. This can be achieved through strict sanitation measures such as the routine complete cleaning of poultry houses as well as periodic checking of the birds for the presence of worms (Demis *et al.,* 2015).

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