RECOVERY OF LARVAE OF OXYSPIRURA SP. FROM SURINAM COCKROACHES

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Abstract

Eye worm infection due to Oxyspirura sp. was detected in a flock of four-week old chicks reared in the backyard of a house in Thrissur district. Surinam cockroaches (Pycnoscelus surinamensis) were identified as the vectors from which all three larval stages of the helminth could be recovered. Successful treatment with Levamisole and possible control measures are also discussed.

Keywords: *Oxyspirurosis, chicks, treatment, vector, Pycnoscelus sp.*

Eye worm infection due to the spirurid worm Oxyspirura sp. is a widely distributed and economically important nematodosis among backyard poultry in the tropical and subtropical regions. This parasite occurs under the nictitating membrane of birds and undergoes a digenetic parasites life cycle involving cockroaches (Pycnoscelus surinamensis) as the intermediate host (Schwabe, 1951). Affected birds suffer from opthalmitis with inflamed watery eyes and watery cheesy material collected under the eyelids. This study was undertaken to identify the vectors of Oxyspirura sp. in poultry.

Materials and Methods

A small flock of eleven chicks aged four-weeks, reared in the backyard of a house in Thrissur District, Kerala ware reported to have ophthalmitis with cheesy material accumulated under the eyelids. The birds were examined and large number of worms were recovered under local anesthesia and placed in FAAL solution for further studies (Sabu *et al*., 2012). A search for the suspected vectors was made around the premises of the household. Ants, beetles and cockroaches were picked up from the manure collected under the night shelter of the birds. They were brought to the laboratory for dissection and further studies.

Results and Discussion

The worms removed from underneath the nictitating membrane were slender, white and thread like in appearance (Fig.1) The male worms measured 9-11 mm while the females were 10-13 mm long. The maximum width of the worms ranged from 285 to 325 µ. The pharynx was typically hour-glass shaped. The posterior end of the male was spirally coiled and had two unequal spicules (Fig. 2).

The ants, beetles and cockroaches collected from the premises of the household were dissected. No nematode larvae could be detected within the body of the ants or beetles. The nymphs and adult cockroaches collected from the manure were identified as Surinam cockroaches (*Pycnoscelus surinamensis*) based on morphology (Fig.3). The adult cockroaches had uniformly dark brown wings,

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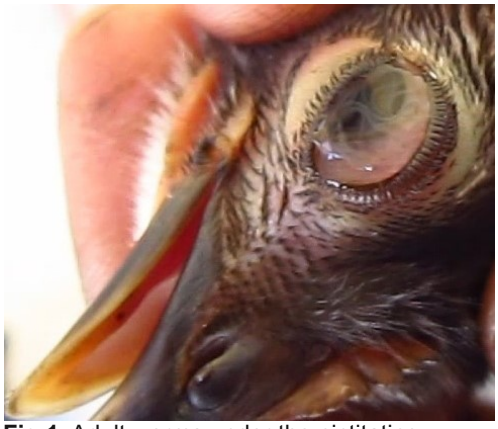

Fig 1. Adult worms under the nictitating membrane

Fig 2. Posterior end of male *Oxyspirura* sp.

Fig 3. Nymph and adult of Surinam cockroaches (*Pycnoscelus surinamensis*)

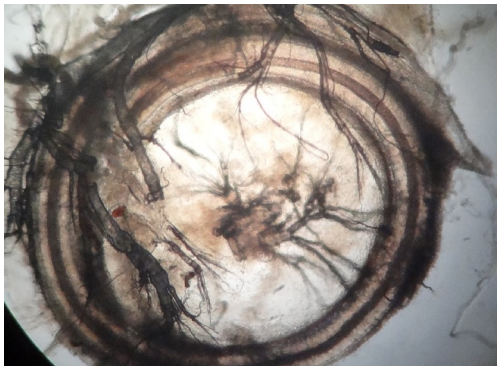

Fig 4. Encysted L_3 dissected out from adult cockroach

Fig 5. Third stage larva recovered from cockroach

shiny dark brown to black head and pronotum and measured two cm in length. The nymphs were similar in appearance but were smaller in size and without wings.

Dissection of the nymphs yielded first, second and third stage larvae. However, the dissection of adult cockroaches yielded a few second stage larvae and large number of encysted third stage larvae (Taylor *et al.,* 2007). One hundred and fifteen larvae (3^{rd} stage-100; 2^{nd} stage-15) could be recovered from a single insect. Every space within the exoskeleton including the space within the legs was found to contain encysted larvae. The first and second stage larvae measured an average 105 and 3500 µ respectively. The encysted larvae were almost circular with a diameter of 1650 µ. The cysts were thin walled and transparent (Fig.4). The wall apparently of loose connective tissue consisted of a gelatinous matrix and a few scattered cells. The wall was richly tracheated, showing that the cyst was formed by the cockroach and not secreted by the parasite (Schwabe, 1951). There were also freely moving third stage larvae in the body cavity and they measured 8.2 to 8.5 mm in length and had a maximum width of 230 µ (Fig. 5). Similar observations have been reported by Schwabe in Hawaii.

Treatment

Two drops of 1% Ivermectin solution was instilled into the eyes of the chicks initially. Since satisfactory improvement of the condition was not noticed even after five days, Lemasole inj. (75 mg/ml) was instilled @ two drops per bird. Along with this, they were also administered 150 mg Levamisole HCl tab dissolved in 5 ml water, given equally among the eleven afflicted chicks. The condition of the birds improved within 24 h and subsequently perfect recovery was obtained. The owner was advised to remove and bury the manure collected underneath the cages. This was to prevent access of vectors to birds and also to reduce the ground for breeding for the cockroaches.

Spirurid infections are common in backyard poultry that have access to different vectors. After the introduction of large scale commercial poultry farming in the state, these infections have declined drastically in the domestic flock for the last several decades. Now that many Government agencies have come forward to encourage backyard poultry rearing in Kerala state, an increase in the incidence of spirurid infections is ought to happen. Knowledge of these infections and their vectors will aid in early diagnosis and adoption of proper control measures.

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