

DOI: <http://dx.doi.org/10.21123/bsj.2016.13.3.0463>

## Association of Cestoda *Raillietina echinobothrida* in Rock Pigeon *Columba livia* from Baghdad city of Iraq

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Received 29, January, 2015

Accepted 9, March, 2015



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### Abstract:

The parasite tapeworm (*Raillietina echinobothrida*) belongs to the class Cestoda, it is responsible for nodular tapeworm disease in poultry. The aim of this study was to determine tapeworm parasites infections in *Columba livia* from two markets in the province of Baghdad for the period from May to December 2014.

From a total of thirty five sample of *Columba livia* were randomly selected and then examined the elementary canal of these samples. The present study showed that the collected rock pigeon were found six infected with the cestode *Raillietina echinobothrida* with infection rate (17.14%).

The statistical analysis for the characters of the cestode showed significant differences in all recipes, but there were no significant differences in the length character of rostellum hooks.

**Key words:** Rock pigeon, *Columba livia*, Iraq, *Reillietina echinobothrida*, Parasites in Birds.

### Introduction:

The tapeworms, Genus: *Raillietina* are, the second most prevalence avian helminthes parasites, and particularly of domestic fowl [1].

The parasite infected the small intestine of fowl, the tapeworm it is responsible for stunted growth of young chicken, it so emaciation of adult and decreased egg production of hen [2]. Under heavy infestation, *R. echinobothrida* is listed as one of the most pathogenic tapeworms, causing conspicuous intestinal nodules in chicken, the nodules can measure up to 6 mm in diameter, which can be seen as

rugged swellings on autopsy, and often cause catarrh and enteritis [3].

*Raillietina echinobothrida* was recorded by [2,3,4,5] from ants and poultry.

In Iraq, works six are rather few and fragmentary including [6,7,8,9,10,11].

The aim of the present study is to investigate the prevalence, infection rate and stastical parameters for the cestode *R.echinobothrida* in *Columba livia* in Baghdad city.

Gizzard worm infection is considered a contributing factor to low weights and hosts in birds [12], This may be because mature worms feed on blood in the gizzard mucosa, causing hemorrhage

leakage of plasma proteins, and potential ischemia resulting in erosions and ulcers [13].

**Materials and Methods:**

A total of 35 sample of the Columbid bird *Columba livia* were taken randomly from the Ghzal market and Ghadeer market at the period from May to Desember 2014. They were dissected and examined for parasites of the elementary canal. After dissecting it, each parts put in petri dishes with normal saline to keep parasites alive and examined using dissecting microscope. The recovered cestodes were clean, stained with acetocarmine, passed through a series of alchohol immersed in canada balsam on slides. Measurements have been taken lengths of different parts of the samples repeated the same species.

All measurements are in millimeters unless stated and expressed as mean followed by rang in parentheses. Identification of the cestode was done according to the available keys and descriptions of [14]; [15] and [16].

Analysis system SAS [17] was used to effect different factors in study parameters. Chi-square test was used to significant compare between percentages and least significant differences LSD test was used to significant compare between means in this attached to the compound microscope (Micros MCX 100).

**Result and Discussion:**

*Raillitena echinobothrida* has recently emerged as one of the most widely studied helminthes parasites, because of its worldwide prevalence [18]; [19].

Only six of the 35 Rock doves were found infected with 17 specimens of *R. echbothrida* cestodes. There were other parasites of the same type not

included in the number of the search results for being incomplete or without head and number almost 7 cestodes.

**Table 1. Distribution of birds sample study according to infected with *Raillietina* using Chi-square.**

Group	No.	Percentage (%)
Healthy	29	82.86
Infected	6	17.14
Total	35	100%
Chi-square- $\chi^2$	---	13.583 **

\*\* (P<0.01).

Evidenced by the current results table -1- and significant differences at the level of high probability of p<0.01 by chi-square value between infected birds (17.14) and (82.86) is not infected, may be due to the good conditions for the pigeons of the external environment reduce infected to parasites or crescent of food they eat. The factor is the rich food supply for the pigeon in the human settlements which has effect on the ability of pigeons to reduce the parasitism [20].

**Table 2. The Comparison between difference of duplicate specimens of *Raillietina echinobothrida* in body length, strobila length, rostellum hook length and scolex length.**

Duplicate specimens	Mean ± SE			
	Body length	Strobila length	Rh length	scolex length
1	3.37	1.61	0.0025	0.057
2	2.19	2.12	0.0020	0.0325
3	3.30	3.13	0.00192	0.0318
4	3.48	3.37	0.00216	0.0410
5	2.92	2.82	0.0016	0.0260
6	2.74	2.59	0.0014	0.0430
7	2.24	2.21	0.0014	0.0270
8	2.26	2.20	0.0024	0.0320
9	2.11	2.05	0.0019	0.041
10	1.02	0.088	0.0012	0.032
11	0.88	0.800	0.00144	0.053
12	1.023	0.950	0.00216	0.032
13	1.060	0.960	0.00096	0.027
14	1.310	1.260	0.00192	0.046
15	1.530	1.510	0.00192	0.046
16	3.620	3.580	0.00192	0.041
17	8.89	8.83	0.00192	0.032
LSD value	1.0238 *	0.966 *	0.00167 NS	0.0179 *

\* (P<0.05), NS: Non-significant.

Table -2- illustrated significant differences at level of probability

p<0.05 between character of *R. echinobothrida* in body length, strobila length and scolex length due to simple differences in the lengths of each other for the parasite, which they return to the same genus as in the length of the rostellum hook. There were no significant differences note worthy because they almost equal length in all parasites examined.

**Table 3. Comparison between difference of duplicate specimens of *Raillietina echinobothrida* in width of scolex and width of neck**

Duplicate specimens	Mean ± SE	
	Width of scolex	Width of neck
1	0.046	0.0425
2	0.040	0.028
3	0.023	0.063
4	0.049	0.032
5	0.048	0.036
6	0.0372	0.0186
7	0.032	0.0186
8	0.060	0.037
9	0.055	0.032
10	0.049	0.026
11	0.049	0.039
12	0.057	0.042
13	0.043	0.027
14	0.057	0.036
15	0.054	0.052
16	0.060	0.041
17	0.057	0.057
LSD value	0.0218 *	0.0194 *

\* (P<0.05).

**Table 4. Comparison between difference of duplicate specimens of *Raillietina echinobothrida* in Sucker diameter and Rostellum diameter**

Duplicate specimens	Mean ± SE	
	Sucker diameter	Rostellum diameter
1	0.013	0.027
2	0.025	0.0225
3	0.0048	0.014
4	0.013	0.0279
5	0.013	0.036
6	0.0068	0.0172
7	0.0069	0.013
8	0.0013	0.024
9	0.013	0.027
10	0.013	0.023
11	0.013	0.022
12	0.013	0.027
13	0.043	0.019
14	0.013	0.026
15	0.013	0.030
16	0.014	0.030
17	0.0129	0.027
LSD value	0.0062 *	0.0105 *

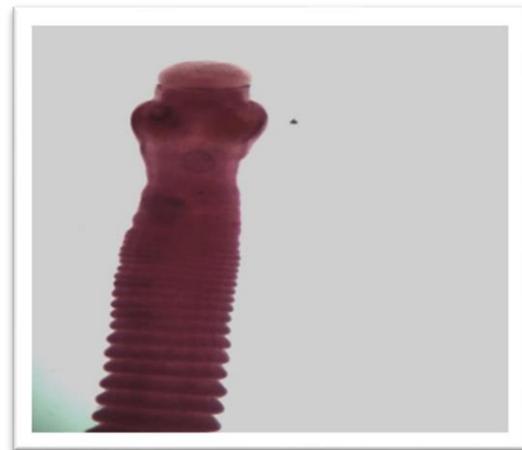
\* (P<0.05).

As in the table -3- and table -4-, there were also significant differences at the level of probability p<0.05 in

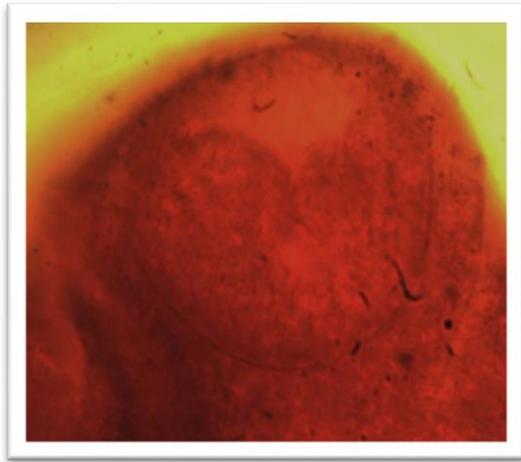
qualities which include (width of scolex, width of neck, suker diameter and rostellum diameter), goes back to simple differences between the width and diameter of each parasite on the other parasite of *R. echinobothrida*.

*Raillietina echinobothrida* incidence percentage was 17.4%. This findings was disagreed with the results 81% ; obtained by [21], also higher than 45% that mentioned by [22,23] 11.5%, [24] 33.66%, [25] 0.3% ,[26] 0.6%, [27] 4% , [28] 25.3% , [29] 53.07% and [30] 1.7%.

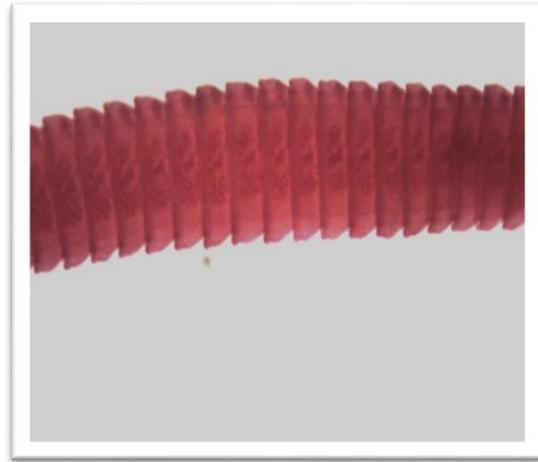
These tapeworm are of considerable economic importance, they injure the host by destroying tissue of the intestinal wall, by burying their heads deep in the wall and even through the muscularis mucosa, and by causing the formation of the intestinal nodules [30]



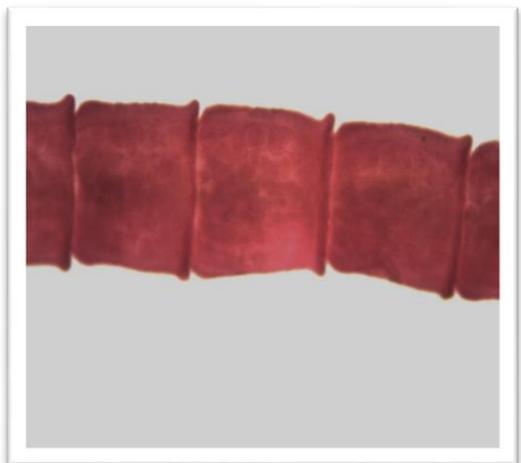
**Fig (1): Scolex of *R. echinobothrida* X100.**



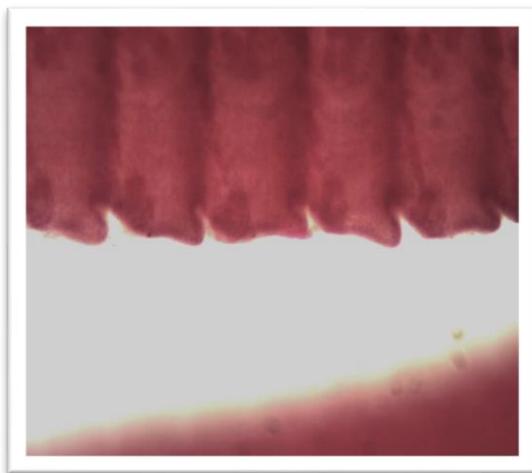
**Fig (2):** Sucker of *R. echinobothrida* X 400.



**Fig 5:** mature segment of *R. echinobothrida* (X 100).



**Fig 3:**Gravid segment of *R. echinobothrida* X100.



**Fig 4:** Genital pore of *R. echinobothrida* X400.

### Conclusion:

Results indicate that *Columba livia* has close associated with humans and in habites almost all ecosystems near human settlements in Iraq. These birds exposed to different kinds of parasites in its habitats, in digestive system of birds specifically the gizzard and the pathological changes in the intestines were characterized by villous atrophy, enteritis with cellular infiltration and formation of characteristic granulomas, all these influence of the infected host and eventually have great importance.

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## ارتباط الديدان الشريطية *Railletina echinobothrida* بحمام *Columba livia* في بغداد – العراق

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### الخلاصة:

دودة طفيلي (*Railletina echinobothrida*) تعود الى صنف الشريطيات، والتي تسبب مرض الديدان الشريطية العقيدية في الدواجن. الهدف من هذه الدراسة هو للتحري عن الاصابات الطفيلية الشريطية في حمام *Columba livia* من سوقين في محافظة بغداد للمدة من شهر ايار لغاية شهر كانون الاول لعام 2014. من مجموع (35) عينة *Columba livia* والتي اختيرت بشكل عشوائي ثم تم فحص القناة الابتدائية لهذه العينات. اظهرت هذه الدراسة ان الحمام الصخري الذي تم جمعه قد تم العثور على إصابة ستة افراد من هذا النوع بطفيلي (*Railletina echinobothrida*) بمعدل إصابة (17.4%). واطهر التحليل الاحصائي لصفات هذه الشريطيات فروق ذات دلالة احصائية في جميع صفات هذه الطفيليات، لكن لم تكن هناك اختلافات معنوية في طبيعة طول الخطافات .

الكلمات المفتاحية: الحمام الصخري، جنس كولمبا ليفيا، العراق ، *Reillietina echinobothrida* ، طفيليات الطيور.