

HELMINTH PARASITES OF THE KESTREL *FALCO TINNUNCULUS* L. 1758 IN IRAQ.

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ABSTRACT

The kestrel *Falco tinnunculus* specimens collected in Iraq are found infected with one or more species of the following helminths ; *Physaloptera alata* (Nematoda) , *Cladotaenia globifera* (Cestoda) , *Prosthogonimus cuneatus* (Trematoda) , and *Sphaerirostris* sp . (Acanthocephala) with a total infection rate of 30 . 56 % . The results are compared and discussed with the pertinent literature .

INTRODUCTION

The falconiformes comprises 36 species of the Iraqi avifauna . The kestrel *Falco tinnunculus* L . 1758 is one of the most common among them in Iraq . It is a resident bird but its number is increased during the migration periods in spring and autumn (Adlouse , 1960) . The food utilized by this bird makes the study of its parasites of an interest since its meal includes insects , rodents , small reptiles and birds . These preys will transmit different species of parasites since they act as intermediate or reservoir hosts .

Except for blood parasites (Shamsuddin and Mohammad , 1981 ; Mohammad , 1991) practically none had been done on the parasites of falconiformes of Iraq .

The present work is a primary effort toward a comprehensive study on the parasites of falconiformes of Iraq .

MATERIALS AND METHODS

A total of 36 birds were shot in different parts of Iraq including Maimoona and Bussiyya (in the south) , Mosul and Kirkuk (in the north) , Rutba and G'ara (in the west) and Attariyya and Mendeli (in the east) . The birds were dissected immediately to get their parasites . The recovered helminths were put first in 1 % warm normal saline to allow them

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to expand , and then kept in 70 % alcohol . The trematodes and cestodes were stained in the laboratory with acetocarmine , dehydrated in a series of alcohol , cleared in xylene and mounted in Canada balsam , while the nematodes were cleared in lactophenol . The photomicrographs were taken with Olympus research microscope (Vanox) .

RESULTS

Eleven birds out of 36 (30 . 56 %) were infected with one or more species of parasites (table 1) . The nematode *Physaloptera alata* is found to be the most common parasite which appears alone in four hosts , followed by the cestode *Cladotaenia globifera* which appears alone in two hosts , then the trematode *Prosthogonimus cuneatus* which appears alone once , then at last the acanthocephalan *Sphaerirostris* sp . which appears once in a mixed infection . The other four infected hosts acquired mixed infection .

A brief description of each helminth is given below :

Physaloptera alata Rud . 1819 (Nematoda , Physalopteridae) (table 2 , figs . 1 - 3) . Each lip bears a triangular external tooth and three smaller internal teeth . The oesophagus occupies about 18 - 23 % of the total length . Male : total length 18 . 5 mm . The tail is about 0 . 45 mm in length . Papillae with long peduncles are five pairs . Three papillae on the anterior lip of cloacal aperture . The spicules are slender . Female : total length 30 . 4 mm . The tail is tapering , measures 1 mm . The uterus forms an egg-chamber much longer than wide , behind which there is a narrow portion 0 . 8 mm long which divides to form the uterine branches . The ovarian tubes occupy the posterior region of the body .

Location : stomach

Parasite	no. host infec.	% of total	no. parasite
<i>Physaloptera alata</i>	4	11 . 11	21
<i>Cladotaenia globifera</i>	2	5 . 56	2
<i>Prosthogonimus cuneatus</i>	1	2 . 78	3
<i>P. alata</i> + <i>C. globifera</i>	2	5 . 56	9 + 4
<i>P. alata</i> + <i>P. cuneatus</i>	1	2 . 78	3 + 2
<i>P. alata</i> + <i>C. globifera</i> + <i>P. cuneatus</i> + <i>Sphaerirostris</i>	1	2 . 78	3 + 1 + 1 + 2

Table 1 : Prevalence of helminths in the Kestrel

	Rud .	specim- ens	Mongol -ian	spec.	Iraqi	spec.
total length	23.8	25.9	11.35	13.15	18.5	30.4
max . width	-	-	0.535	0.66	0.615	0.8
nerve ring - ant . end	0.382	0.36-	0.321	0.338	0.360	0.382
length of esophagus						
ant . part	0.5	0.48	0.43	0.45	0.72	0.8
post . part	4.54	3.9-	2.7	2.88	4.5	4.8
right spicule	0.276	-	0.407	-	0.276	-
left spicule	0.582	-	0.476	-	0.35	-
vulva - ant . end	-	7.2	-	8.89	-	7.5
eggs (μ m)	-	-	-	47X 24	-	46X22

Table 2 : Important measurements of *Physaloptera alata* (in mm)

Cladotaenia globifera (Batsch) (Cestoda , Taeniidae) (fig 4-5) . Small taeniid , strobila 72 - 119 mm in length , 1.5 mm in maximum width . Metamerism distinct margins serrate . Scolex 0.25 - 0.27 mm long and 0.21 - 0.22 mm wide . Neck region distinct . Suckers prominent , 0.08 - 0.09 X 0.06 - 0.08 mm . Genital pores alternate irregularly . Testes numerous in two median fields . Ovary two winged at the posterior end of proglottis . Vitelline gland transversely elongated , post ovarian . Uterus is a median stem not reaching the end of proglottis . Eggs oval , 0.0283 X 0.0206 mm .

Location : small intestine

Prosthogonimus cuneatus (Rud . 1809) Braun 1901 (Trematoda , Prosthogonimidae) (fig . 6) . Body flattened pyriform and transparent , 2.82 - 4.27 mm in length , 1.51 - 1.97 mm in maximum width at about a third of body length from the posterior end . Cuticular spines minute , oral sucker terminal , circular 0.245 X 0.245 mm ; acetabulum circular 0.559 X 0.562 mm . Testes two , oval , almost equal 0.597 X 0.433 mm . Ovary branched 0.464 X 0.464 mm . situated directly behind acetabulum to the right side . Vitellaria follicular extending extracaecally along the middle third of the body from the level of acetabulum . The ascending and descending limbs of the uterus pass between the testes and fill the posttesticular portion of the body . Eggs dark brown , elliptical average 0.035 X 0.016 mm .

Location : cloaca .

Sphaerorostris sp . (Acanthocephala , Centrorhynchidae) . Only two partially damaged specimens were recovered from a single host acquired tetrad infection (table 1) . Total length 45 , 31 mms . maximum width 1.5 , 1 mms , proboscis 6 , 4 . 5 mms respectively .

Location : intestine

Stomach contents examination reveals presence of grasshoppers , ticks of *Rhipicephalus* sp . , Syrian dwarf snake *Eirenis coronella* , the lizard *Acanthodactylus* sp . and the house mouse *Mus musculus* .

DISCUSSION

The reporting of the nematode *Physaloptera alata*, the cestode *Cladotaenia globifera*, the trematode *Prosthogonimus cuneatus* and the acanthocephalan *Sphaerirostris* sp. from the kestrel *Falco tinnunculus* (table 1) constitute new records for Iraq .

The nematode *Physaloptera alata* appears to be of world wide distribution . It was reported in the stomach and intestine of the avian genera *Falco*, *Aquila*, and *Accipiter* in Europe , Africa , Japan , China , Mongolia , North America , Brazil , and Australia (Baylis , 1936 ; Yamaguti , 1961 Yorke and Maplestone , 1962 ; Hartwich , 1966) .

The classification of *Physaloptera* is very unsatisfactory since eight very similar species are reported from birds of prey and there has been a good deal of confusion between them (Baylis , 1939 ; Yorke and Maplestone , 1962) . It is obvious , as in table 2 , that the present specimens are more related to rudolphi type specimens and to Seurat (1915) specimens (cited in Baylis , 1939) rather than that of Li (1934) (cited in Baylis , 1939) or the Mongolian specimens examined by Hartwich (1966) .

The cestode *Cladotaenia globifera* is reported from several species of birds of prey in Europe , Africa , and North America (Jones , 1930 ; Yamaguti , 1959) . It was believed that *C. globifera* is a synonym of *Taenia cylindracea* Bloch 1782 (Wardle and McLeod , 1952) , but Mc Intosh (1940) and Crozier (1946) considered this species as a valid species among twelve accepted ones of the genus *Cladotaenia* .

The trematode *Prosthogonimus cuneatus* is a cloacal parasite . It seem to be of a cosmopolitan distribution with a wide range of hosts . The list of hosts includes 8 avian orders and 22 genera , three of them from falconiformes (Dawes , 1956 ; Yamaguti , 1958 ; Zhu Hua *et al.* , 1982) . As result of this Skrjabin (1948) reported a wide range of variations both in measurements and morphology among *P. cuneatus* recovered from different avian hosts . However , this species is pathogenic causing inflammation of the oviduct and various abnormalities of the host egg (Dawes , 1956) . The measurements of the present specimens are almost similar to that given by Dawes (1956) .

The specific name of the acanthocephalan *Sphaerirostris* (Golvan 1956) could not be determined because only two partially damaged specimens were recovered from a single host in a case of tetrad infection (table 1) . However , Yamaguti (1963) found the adults of this genus in birds and mammals while the larvae in invertebrates , amphibians , reptiles and mammals . These intermediate hosts list closely resembles the meal list of the kestrel .

The different components of the kestrel meal lead for acquiring different species of parasites . Skrjabin (1948) and Jones (1967) mentioned the dragon fly (Insecta) as intermediate host of *P. cuneatus* , while Mc Intosh (1940) obtained cysticerci by feeding segments of *Cladotaenia foxi* to laboratory mice . Both insects and rodents are reported in this study as components of the kestrel food .

Fragments of *Rhipicephalus* sp. ticks were occasionally seen in the stomach contents . They may be swallowed accidentally with their original hosts (rodents ?) which were eaten by the kestrel .

The figures of table 1 could not give a clear idea about the prevalence of the reported helminths in the kestrel because of the small sample size . Surveying more numbers of the kestrel will definitely reveals presence of more parasite species . This is based chiefly on the food type utilized by the bird which include invertebrate and vertebrate probable intermediate or reservoir hosts for the parasites .

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ACKNOWLEDGEMENTS

I would like to express my deep thanks to Mr. Saman R. Afrasiab, Herpetology section, Iraq Natural History Museum, Baghdad for identifying the reptiles found in the stomach contents of the birds.

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الديدان الطفيلية في صقر العوسق في العراق

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الخلاصة

وجد بان نماذج صقر العوسق التي جمعت من مناطق مختلفة في العراق كانت مصابة بنوع واحد او اكثر من الديدان الخيطية او الشريطية او المثقويات او شوكية الراس ونسبة اصابة اجمالية قدرها 65 و 30 % . علما ان انواع الديدان التي تم الحصول عليها تسجل لأول مرة في العراق . وقد قورنت النتائج ونوقشت على ضوء البحوث ذات العلاقة .

