ISOLATION AND IDENTIFICATION OF SOME DIGENETIC TREMATODES OF SHELDUCK (TADORNA TADORNA) IN PORT SAID GOVERNORATE, EGYPT

ABD EL AAL, A.M.I.[1], SAMAR W. TADROS[2], AND M.W. GHATTAS[2]

1- Animal Health Research Institute, Matrouh provincial lab.
2- Animal Health Research Institute, Port Said branch provincial lab.

Abstract

In examining of 13 Shelduck (Tadorna tadorna) from North Coast at Port Said governorate, Egypt, durnig the period from August to December 2011 resulted in the recovery of three species of digenean trematodes. One species, Brachydistomum microscelis isolated from gall bladder while, the other two, Echinoparyphium elegans and Haplorchis pumilio recoverd from intestine with an incidence rate of 30.8, 15.4 and 30.8% respectively. The Egyptian North Coast at Port Said considered as a new locality record for the revealed digenean trematodes in this study from Shelduck, Tadorna tadorna. The morphological features of those trematodes were done.

INTRODUCTION

Wild birds play an important role in the dissemination of dangerous parasites to domestic birds, mammals and human either by direct or indirect means. Many records of human infection with trematodes as, Clinostomum complanatum, Echinoparyphium paraulum, Himastha muchlenis, Echimstems spp. (Watson, 1960), Prohemistomum vivax (Nasr, 1941), Phaneropsolus bonnei (Manning and Viyanant, 1972), Phaneropsolus assiuticus (Khalifa and El-Naffar, 1983) Halorchis taichui (Kumchoo, et al., 2005). Aquatic wild birds have usually fed a diet containing high proportion of arthropods, earth worms, fish and crustaceans, many of those are intermediate hosts for helminthes. Therefore, they are expected to carry high parasitic burden. In Egypt, limited studies has been done on the helminthes of aquatic migratory birds except that conducted by (Desoky, 1981), (E L-Sokkary, 1992), (Amer and Ghattas, 1993), (Mahmoud et al., 1995) and (Abdel Aal et al., 2001).

The present study is aimed to evaluate the incidence, morphological descriptions of digenetic trematodes infecting Shelduck (Tadorna tadorna) as well as the possibility of transmission to domestic birds and human were taken in consideration.

MATERIALS AND METHODS

Thirteen Shelduck, Tadorna tadorna (collected from North Coast at Port Said governorate, Egypt, between Augusts to December, 2011) were examined for digenetic trematodes. The alimentary tracts were opened, washed with physiological saline. The sediment was examined by the steriodissecting microscope for collection of digenean trematodes. The collected trematodes were washed in normal saline and mounted for examination according to technique described by (Kruse and Pritichard, 1982) and (Beaver et al., 1984). The specimens were identified according (Yamaguti, 1933 and1958), (Desouky, 2003) and (Diaz et al., 2008)

RESULTS

From thirteen examined Shelduck, Tadorna tadorna, three digenetic trematodes were isolated. The recoverd trematodes were Brachydistomum microscelis, Echinoparyphium elegans and Haplorchis pumilio with an incidence rate of 30.8, 15.4 and 30.8% respectively, table (1).

Table 1. Incidence of digenetic trematodes of Shelduck (Tadorna tadorna) in Port Said, Egypt.

Parasite species	No. of ex. birds	No. infected	Prevalence rate %
1- Brachydistomum microscelis	13	4	30.8
2- Echinoparyphium elegans	13	2	15.4
3- Haplorchis pumilio	13	4	30.8

The morphological description of recorded trematodes was illusterated as follows:

Family: Dicrocoeliidae Odhner, 1911

Subfamily: Dicrocoeliinae Looss, 1899

Genus: Brachydistomum Travassos, 1944

Species: Brachydistomum microscelis Ozaki, 1944 (Fig. 1, Pl. I).

Site of infection: Gall bladder.

Description (based on 7 specimens): Its body is oval, with smooth cuticle and measures 1.6-2.2 mm. in length and 0.5-0.8 mm. in width at acetabulum region. The oral sucker is large and measures 0.20-0.27 mm. in length and 0.30-0.36 mm. in width. The acetabulum is larger than oral sucker, situated in anterior half of the body (prequatorial) and measures 0.42-0.52 mm. in length and 0.54 - 0.60 mm. in width and absence of pharynx and esophagus. The caeca not reach to posterior extremity.

The testes are present behind acetabulum in oblique position and measures 0.15-0.18 mm. in length and 0.10 - 0.15 mm. in width for each. Round ovary, behind posterior testes and measures 0.16 - 0.19 mm in length and 0.16 - 0.19 mm. in width. Cirrus pouch is pre- acetabulum, enclosing winding seminal vesicle. Genital pore is nearer to oral sucker. The uterine coils are filling the space from middle of acetabulum to level of caecal end. The vitellaria is comparatively large and slightly extendes behind the ovary.

Family: Echinostomtidae Poche, 1926

Subfamily: Echinostonatinae Faust, 1929

Genus: Echinoparyphium Dietz, 1909

Species: Echinoparyphium Elegans Dietz, 1909 (Fig. 2, Pl. II).

Site of infection: intestine.

Description (based on 4 specimens): The body is slender, attenuated posteriorly and measures 1.4 - 1.9 mm. in length and 0.40 - 0.47 mm. in width at acetabular level. Well developed head collar with single row of 23 collar spines without interruption dorsally. Spineless body surface. Small oral sucker is and measures 0.20 - 0.24 mm. in length and 0.23 -0.28 mm. in width. Pharynx is present and measures 0.07 - 0.09 mm. in length and 0.05 - 0.07 mm. in width. The esophagus is long and measures 0.30-0.39 mm. in length. The acetabulum is round and larger than oral sucker and situated in anterior third of the body near to anterior extremity, it measures 0.28-0.32 mm. in length and 0.21-0.25 mm. in width. The caeca reaching to near posterior extremity.The testes are tandum, oval in shape, situated proximally in posterior half of the body and measures 0.06-0.09 X 0.04-0.06 mm and 0.04-0.07X 0.03-0.06 mm. for anterior and posterior testes respectively. Cirrus pouch present anterior-dorsal to acetabulum. Genital pore lies in median line and pre-acetabulum. The ovary is oval, pre-testicular and measures 0.07-0.09 mm. in length and 0.04-0.06 mm. in width. The uterus present in intercaecal and short. The vitellaria is in the form of small follicles extending in lateral field in hind body (not extend beyond the ovary).

Family: Heterophyidae Odhner, 1914

Subfamily: Haplorchiinae Looss, 1899

Genus: Haplorchis Looss, 1899

Species: Haplorchis pumilio Looss, 1896 (Fig. 3, Pl. III).

Site of infection: intestine.

Description (based on 9 specimens): Very small delicate body, measures 0.6 - 0.9 mm. in length and 0.17 - 0.21 mm. in width at ovarian level. The anterior part of the body is narrow and flattened while the posterior part is plump. The whole surface

of the body is covered with spines. The oral sucker is moderately developed and measures 0.05 - 0.08 mm. in length and 0.10 - 0.14 mm. in width. The prepharynx is very short. The pharynx is ovoid, present in first part of esophagus and measures 0.03 -0.05 mm. in length and 0.03 - 0.05 mm. in width. Long esophagus and measures 0.11 - 0.14 mm in length. The acetabulum is embedded in parenchma post bifurcation of caeca and measures 0.10-0.13 mm. in length and 0.06-0.09 mm. in width. The intestinsl bifurcation situated between the first and middle thirds of the body. The caeca reached to the boundary between the middle and the last thirds of the body. The testes single, located near posterior extremity of the body and measures 0.08-0.11 mm. in length and 0.10-0.14 mm. in width. Seminal vesicle is present anterior to the ovary. The ovary is globular, pre-testicular and measures 0.08-0.11 mm. in length and 0.10-0.14 mm. in width. No cirrus pouch. The vitellaria extending from the posterior border of the ovary to the posterior end. The uterus occupying most of plump part of the body.

DISCUSSION

Shelduck, Tadorna tadorna was found to be infected with three species of digenean trematodes identified as Brachydistomum microscelis isolated from Gall bladder and Echinoparyphium elegans and Haplorchis pumilio recoverd from intestine with an incedence rate of 30.8 and 15.4 , 30.8% respectively.

The morphological description of Brachydistomum microscelis agreed with that described by (Yamaguti, 1933) except for slight measurement difference, but differ in uterine coiles of our specimen fill the space from middle of acetabulum to caecal end level meanwhile that of (Yamaguti, 1933) filling up most of post caecal area of the hind body.

Echinoparyphium elegans has the characteristic morphology of the genus Echinoparyphium described by (Yamaguti, 1958). These characteristics are short uterus, the vitellaria in the form of small follicles not extend beyond the ovary. E. Elegans characterised by a single row of 23 collar spines and abscence of spines from body but E.oscitanci recovered from Asian open billed-storks in Thailand by (Poonswad and Chatikavanij, 1989) has 25 collar spines arranged in a single row and the anterior part of the body surface from oral suker till acetabulum was covered with minute spines.

Finally, Haplorchis pumilio characterized by a single testes located near posterior extremity of the body and uterus occupying most of the space of plump part of the body in agreement with that described by (Desouky, 2003) except for slight measurment differences, but that of (Looss, 1896) characterized by a crow of minute spines at acetabulum opening which not present in our specimen.

Haplorchis pumilio recovered in the present study for first time in Shelduck, also recorded from dogs and little Owl by (Nabih, 1998) and (Desouky, 2003) respectively. Its metacercaria was found in mixed infection with Haplorchis taichui in cyprinoid fish muscles from Thailand (Kumchoo, et Al., 2005), where the adult fluke of latter is able to develope in the intestine of birds and mammals including humans (Yamaguti, 1958) and (Cheng, 1974).

Considering the most of recorded digenetic trematodes in the present investigation are of wide host range including domestic birds, mammals even human. This clarify the role played by aquatic wild birds in disseminating and maintaining dangerous parasites in the environment leading to economic or public health importance.

Our study on Shelduck, Tadorna tadorna, provide an opportunity to asses trematodes circulating within migratory populations of waterfowl in the region and highlights the relative risk of parasite dissemination to closed captive populations, fish and human.

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Fig. 1. Brachydistomum microscelis (X 40).

Fig. 2. Echinoparyphium elegans (X 40).

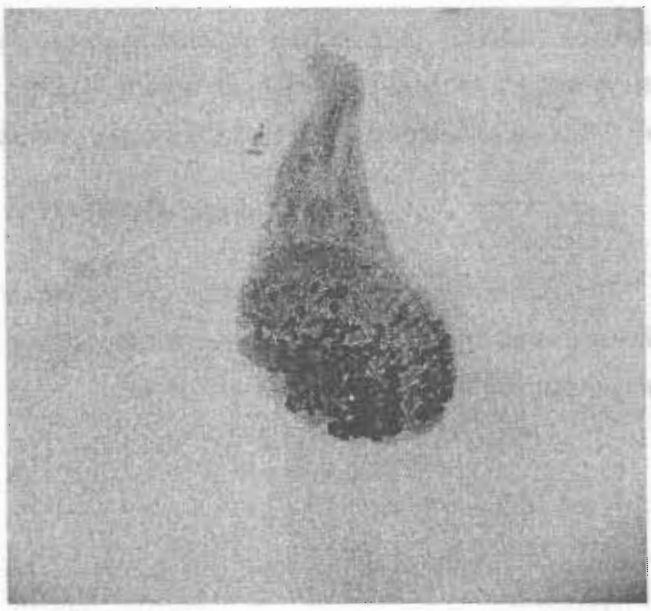

Fig. 3. Haplorchis pumilio (X 40).

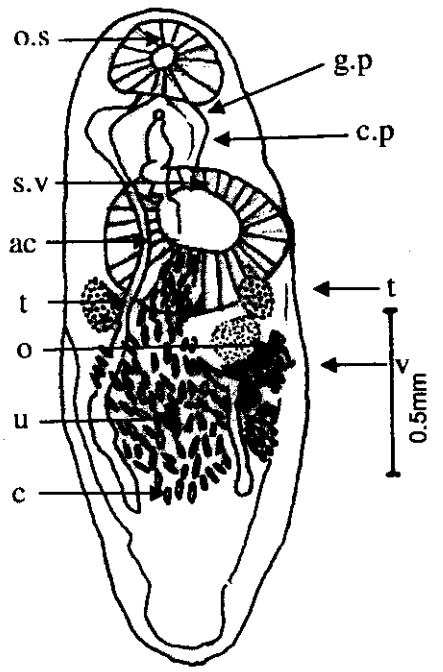

Plate I

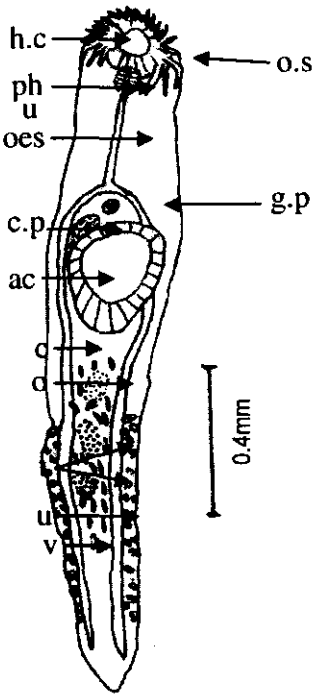

Plate II

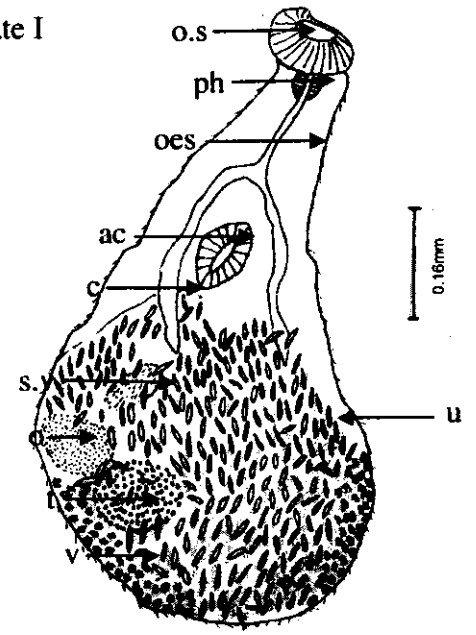

Plate III

Plate I: Brachydistomum microscelis Plate II: Echinoparyphium elegans

Plate III: Haplorchis pumilio (illustrated by camera Lucida)

Abreviations: (o.s) oral cucker, (ac.) acetabulum, (h.c) head colar, (ph) pharynx, (oes.) oesophagus, (c) caeca, (t) testes, (o) ovary, (v) vitellaria, (g.p) genital pore, (c.p) cirrus pouch, (s.v) seminal vesicle, (u) uterus.

REFERENCES

1. Abdel-Aal, A.A., Badawy, G.A. and Ghattas, M.W. 2001. Some digenetic trenatodes of the black-headed gulls (Larus ridibundus) caught from El-Manzala and Mediterraean Sea at Port-Said, Egypt. J. Egypt. Vet. Med. Assoc., 61 (6c): 145-161.
2. Amer, O.H. and Ghattas, M.W. 1993. Studies on the role played by fresh water fish in transimitting of some trematodes to fish eating birds. J. Egypt. Vet. Med. Assoc., 53 (1&2): 121-128.
3. Beaver, K. C., Jun, R. C. And Cupp, E. W. 1984. Clinical Parasitology, USA, Lea Febiger, Philadelphia.
4. Cheng, T. C. 1974. General parasitology. New York: Academic Press.
5. Desoky, E. A. (1981): Studies on the helminth parasites infesting aquatic Egyptian and migrant birds. M.V. Sc. Thesis, Fac. Vet. Med., Zagazig Univ.
6. Desouky, A. Y. 2003. Studies on digenatic trematodes infecting some Egyptian wild birds. EVMSPJ, 1(1): 87- 108.
7. Diaz, M.T., Hernandez, L.U. and Bashirullah, A.K. 2008. Studies on the life cycle of Haplorchis pumilio (Looss, 1895) (Trematoda: Heterophyidae) in Venezuela. Revista Cientifica, FCV-LUZ/ XVIII (1): 35-42.
8. El- Sokkary, M.Y. 1992 a. Digentic trematodes infesting certain aquetic and migrant birds in Egypt. Zagazig.Vet. J., (2): 247-262.
9. Khalifa, R, and El-Naffar, M.K. 1983. Phneropsolus assiuticus sp. n. (Trematoda: Pleurogenidae) from birds of Upper Egypt and remark on representative of the genus. Acta Parasite., Pol., 28: 369-373.
10. Kruse, G .O. W. And Pritchard, M. H. 1982. The collection and preservation of animal parasites. Univ. Of Nebraska Press, USA.
11. Kumchoo, K. , Wongsawad, C., Chai, J-Y, Vanitanal, P. And Rojanapaibul, A. 2005. High prevalence of Haplorchis taichui metacercariae in cyprinoid fish from Chaing Mai provine, Thailand. Southeast Asian J. Trop. Med. Public health, 36(2): 451-455.
12. Looss, A. 1896. Recherche sur la fauna parasitaire de l´Egypte ler partie. Memories de I´institut Egyptian Vol.3, 1-252.

13. Mahmoud, K.L.,, El-Akabawy, L.M.,, Eid, N. And Selim, M.K. 1995. Prevalence, intensity and morphological identification of six digenetic trematodes from wild and migratory birds in lower Egypt. J. Egypt. Vet. Med. Assoc., 55 (1): 423-436.
14. Manning, G.S. and Viyanant, V. 1972. Phneropsolus bonnei Lie Kian, 1951 established as naturally occuring parasite of human. J. Parasitol., 58: 625.
15. Nabih, A. M. 1998. Some studies on on helminthes infesting dogs. Ph.D. Thesis, Fac. Vet. Med. Tanta Univ.
16. Nasr, M. 1941. The occurance of Phneropsolus vivax infection in man, with redescription of parasite. Lab. And Med. Pro., 21: 135-149.
17. Poonswad, P. And Chatikavanij, P. 1989. Echinoparyphium oscitansi n. sp. (Trematoda: Echinostomatidae): natural infection in Asian Open- Billed Storks (Anastomus oscitans, Aves: Ciconiidae) in Thailand. J. Sci. Soc. Thailand, 15: 293-299.
18. Watson, T.M. 1960. Medical Helminthology. Tindal and Cox, London.
Yamaguti, S. 1933. Studies on the helminth fauna of Japan. Part. 1. Trematodes of birds, reptiles and mammals. Japan J. Zool., 5(1) : 1-134.
19. Yamaguti, S. 1958. Systema hel Yamaguti, S. (1958): Systema helminthum. Vol. I. The digenetic trematodes of vertebrates. Intersci-ence Publ., New York.

عزل و توصيف بعض أنواع المثقبات ثنائية العائل في طائر الشهرمان بمحافظة بورسعيد- مصر

أحمد محمد إبراهيم عبد العال[1] - سمر وليم عبدالملك تادرس[2] - ممدوح وجدي غطاس[2]

١- معهد بحوث صحة الحيوان بمطروح

٢- معهد بحوث صحة الحيوان ببورسعيد

نتيجة لفحص عدد ثلاثة عشر من طائر الشهرمان المهاجر (تادورنا تادورنا) في منطقة الساحل الشمالي بمحافظة بورسعيد – مصر، خلال الفترة من أغسطس إلى أكتوبر سنة ٢٠١١، تم عزل ثلاثة أنواع من ديدان التريماتودا ثنائية العائل، نوع واحد من الحوصلة المرارية وهو براكى داى ستومم ميكروسيلز والنوعين الآخرين من الأمعاء وهما ايكينوبرفيم ايليجانس و هبلوريكز باميليو بنسبة إصابة ٣٠.٨ ، ١٥.٤ و ٣٠.٨% على التوالي. التريماتودا ثنائية العائل التي تم عزلها في منطقة الساحل الشمالي بمحافظة بورسعيد يعتبر أول تسجيل لها في طائر الشهرمان المهاجر. تم مناقشة إمكانية انتقال تلك الديدان الورقية الى الطيور الأخرى والثدييات والإنسان. كما تم توضيح الوصف المورفولوجى لهذه الديدان.