J.Thi-Qar Sci. No. (3) Vol.1 Janu. /2009

ISSN 1991- 8690 الترقيم الدولي ١٩٩١ - ٨٦٩٠

Website: http://jsci.utq.edu.iq Email:utjsci@utq.edu.iq

First record of cestode Mathevotaenia erinacei Meggitt, 1920 from Hedgehog Hemiechinus auritus in Basrah Province, Iraq

Khalid. J.K. AL-Zihiry

Department of Microbiology/College of Medicine

University of Thi-Qar

Abstract

The present study was carried out on 35 specimens of long eared hedgehog *Hemiechinus auritus* Gmelin,1770 in several localities of Abu Al-Khasib district, Basrah province during the period from March to September, 2004.The intestine of hedgehog was removed and examined to searching for helminth parasites. One species of cestode were collected from 4(11.4 %) of examined animals . The isolated cestode was similar to original description of *Mathevotaenia erinacei*, therefore redescription and Comparison between two measurements were given. The present finding of this cestode represent its first Record in iraq.

Introduction

Hedgehog pose a risk for a number of potential zoonotic disease (Fairley et al., 1999), these include microbial infection such as *salmonella* and *Mycobacterium* which reported in several studies that shown the hedgehog play a major role in transmission of bacterial disease especially *Salmonella* (Woodward et al., 1997). Fungal and Viral disease also reported as a zoonotic infection in hedgehog (Rosen and Jablon, 2003). Many disease conditions can cause immunodeficiency in human (AIDS) (Maertens et al., 2001), and immunocompromised persons may be at in increased risk for infections from hedgehog and should be particularly careful (Riley and Chomel, 2005). Parasites regarded a major agent of disease that infect hedgehog and became a source of human infection such as *Capillaria hepatica* (Brander et al., 1990) and *Cryptosporidium parvum* that cause a death in captive juvenile African pygmy hedgehog (Graczyk et al., 1998), in contrast most hedgehogs carry a parasite load that is asymptomatic in healthy animal (Reeves,1994). Several studies was carried out in the world concerned with helminths of hedgehog. Prokopic (1971) collect the cestode *Rodentolepis erinacei* from the *Erinaceus europaeus* and *E. roumanicus* in various localities of Czechoslovakia, Egg of adult cestode were used for experimental infection of beetles. Some Helminths was collected from hedgehog *E.europaeu*include lungworms *Crenosoma striatum*, intestinal nematode Capillaria sp. , cestodes *R. erinacei*, trematode *Brachylaemus erinacei* and acanthocephalan *prosthoryhnchus* sp. (Keymer et al., 1991). Bunnell(2001) isolate the nematode C. *striatum* and cestode *Hymenolepis erinacei* during the survey on parasites of 168 hedgehog *E.europaeus* in York, England between 1998 to 2000.While the acanthocephalan *Moniliformis moniliformis* was isolate from the hedgehog *Hemiechinus auritus* from Mongolia (Tinnin *et al.*, 2008). In Iraq only two studies was available deals with isolation and identification of hedgehog helminthes, Jawdat and Al-Jafary (1979) isolate the acanthocephalan *M. moniliformis* from the intestine of *H. auritus* in Baghdad province. Al-Zihiry (2002) examine 30 hedgehog *H. auritus* in Basrah Province and record two species of nematode, *Pterygodermatites plagiostoma* and larval stage of physalopteridae. The aim of present study is to gain the knowledge of helminth fauna of small mammals in Southern Iraq.

Materials and Methods:

Thirty five specimen of long eared hedgehog *Hemiechinus auritua* were collected from several areas of Abu-Al-Khasib (South east of Basrah center) by some metal traps, Live animals were brought to the laboratory then anesthetized using ether or chloroform. All collected individuals were dissected and their internal viscera were kept in normal saline and examined using dissecting microscope.

The collected cestodes were relaxed in refrigerator for 24 hours then fixed in A.F.A (Alcohol-Formalin-Acetic acid) solution or 70 % ethylalcohol (Berland, 1984). To preparation the cestode for study, stained in Semichon's carmine, dehydrated in serious of ethyl alcohol reaching to 100 % concentration, cleared in xylene and mounted on slides using Canada balsam as cited in Garcia and Ash, 1979; Berland, 1984. All measurements were taken and drawing

were done using drawing tube of Olympus microscope. Meggitt, 1920; Santa, 1956, Yamaguti, 1959 and Schmidt, 1986 were depended for classification the cestode in present study .

Results

From 35 hedgehog *Hemiechinus auritus* were collected in present study, 4(11.4 %) were found to be infected with cestode *Mathevotaenia erinacei*

Description (based on 5 specimen,All measurements in millimeters)Small size tapeworm, total length of worm 14-17,having approximately 30 proglottids.Rostellum absent. Scolex unarmed 0.53-0.61 long, 0.44-0.51 wide, has four suckers 0.19-0.27 long, 0.16-0.19 wide. Neck short. Immature proglottids wider than long, 0.2-0.26 long, 0.22-0.36 wide. Mature proglottids 0.63-0.69 long, 0.46-0.51 wide. Gravid proglottids longer than wide, 0.97-1.27 long, 0.78-0.95 wide. Genital pores irregularly alternating. Testes numerous, semi-rounded , lying at the posterior part of proglottid 37-39(microns) long, 24-31(microns) wide. Cirrus sac elongated 0.17-0.20 long, 0.04-0.07 wide. Seminal vesicle absent. Ovary bilobed occupying median area of proglottid, 0.10-0.14 long, 0.19-0.22 wide. Viteline gland lying behined the ovary, 0.05-0.09 long, 0.04-0.09 wide. Uterus relapsed by thin egg capsules each one with single egg.

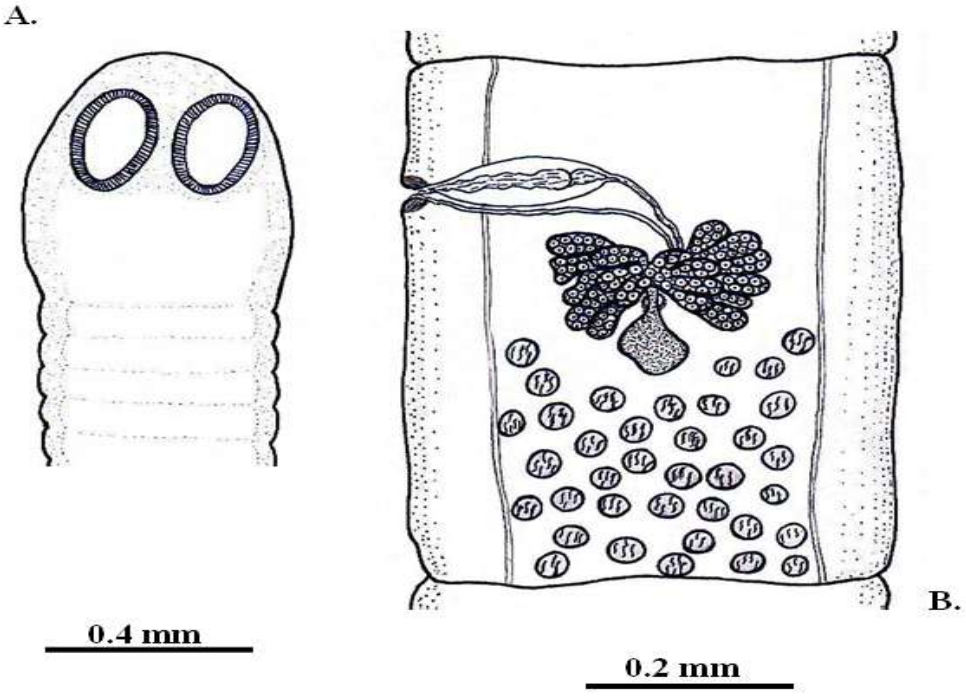

Figure (1): *Mathevotaenia erinacei*
A. Scolex B. Mature proglottid

Discussion:

The genus *Mathevotaenia Akhumian* 1946 Syn. *Oochoristica* Luhe, 1898 is a large unwieldy complex of species parasitizing more than 56 species of mammals and reptiles (McAllister *et al*., 1985), and many species of arthropods serve as a intermediate hosts for those parasites (Yamaguti, 1959).

Several species of *mathevotaenia* were reported from mammals especially from rodents and insectivores such as *M. rodentium* that recorded from *Gerbillus gerbillus* and *Acomys dimidiatus* in Southern Sinai (Werthem and Greenberg, 1970). In pakistan Noor-Un-Nisa,(2001) report the cestode *M.symmetrica* from small intestine of *Tatera indica*. *M.argentinensis, M.bivitta* were isolated from Marsupials in Argentina (Campbel et al., 2003).

Concerning the hedgehog, *M. skrjabini* was recorded from intestine of *Hemiechinus auritus* in Kuwait (Khalil and Abdul-Salam, 1985). Only two species *M. symmetrica, M. rodentium* were recorded in Iraq, these cestodes were isolated from rodents for the first time by Mahmoud, (1974), Salih,(1975) .

Human infection with *Mathevotaenia* were reported in 10 months old girls in Bangkok, Thailand following treatment with niclosamide (Lamon and Greer, 1986). The worms closely resembled *M.symmetrica*, a cosmopolitan intestinal cestode of rodents . The diarrhea associated with this infection resolved after anthelminthic treatment (John and Petri,2006) .

The measurements of present specimen was similar to that given in original description by Meggitt (1920) from hedgehog *Erinaceus* sp. in Mesopotamia.Table (1) .

Table (1): The measurements (mm) of *Mathevotaenia erinacei* in present study and Meggitt (1920)

	Present study	Meggitt (1920)
Body		
Long	14-17	15
Wide	0.78-0.95	1.0
Scolex		
Long	0.53-0.61	0.62-0.65
Wide	0.44-0.51	0.50-0.52
Oral Suckers		
Long	0.19-0.27	0.2-0.25
Wide	0.16-0.19	0.21-0.24
Mature Proglottids		
Long	0.63-0.69	0.66
Wide	0.46-0.51	0.46
Testes		
Long	37-39 microns	38-44 microns
Wide	24-31 microns	32-38 microns
Cirrus Sac		
Long	0.17-0.20	0.09 in diameter
Wide	0.04-0.07	
Ovary		
Long	0.10-0.14	0.14
Wide	0.19-0.22	0.16
Vitteline gland		
Long	0.05-0.09	0.09
Wide	0.04-0.09	0.08
Host	*Hemiechinus auritus*	*Erinaceus* sp.

References

1- Al-Zihiry, K.J.K.(2002). Helminth parasites in some small mammals from Basrah Provine. M.Sc. thesis, Coll. Edu., Univ. Basrah: 84 pp.

2- Berland, B.(1984). Basic techniques involved in helminth preservation.Systematic Parasitol.,6:242-245.

3- Brander, P.; Denzler, T. and Henzi, M.(1990).*Capillaria hepatica* in dog and hedgehog. Schweizer Archiv fur Tierheilkunde, 132: 365-370.

4- Bunnell, T.(2001). The incidence of disease and injury in displaced wild hedgehog (*Erinaceus europaeus*). LUTRA, 44(1): 3-14

5- Campbell, M.L.; Gardner, S.L. and Navone, G.T.(2003). A new species of *Mathevotaenia* (Cestoda: Anoplocephalidae) and other tapeworms from marsupials in Argentina. J. Parasitol., 89(6): 1181-1185.

6- Fairley, J.A.; Suchniak, J.; Paller, A.S.(1999). Hedgehog hives. Arch. Dermatol., 135: 561-563.

7- Garcia, L.S. and Ash, L.R.(1979) . Diagnostic parasitology: Clinical laboratory manual. 2nd edn., The C.V. Mosby company st. Louis 174pp.

8- Graczyk, T.K.; Cranfield, M.R.; Dunning, C. and Strandberg, J.D.(1998). Fatal cryptosporidiosis in a juvenile captive African hedgehog (*Ateletrix albiventris*). J. Parasitol., 84: 178-180.

9- Jawdat, S.Z. and Al-Jafary, A.R.(1979). Acanthocephala: *Moniliformis moniliformis* (Bremser, 1811) from hedgehog, *Hemiechinus auritus* in Iraq. Bull. Nat. Hist. Res. Centre, 7(3): 83-91.

10- John, D.T.; Petri, W.A.(2006). Markell and Voge's Medical Parasitology. 9th edn., Elsevier Inc., 463 pp.

11- Keymer, I.F.; Gibson, E.A. and Reynolds, D.J.(1991). Zoonoses and other findings in hedgehogs (*Erinaceus europaeus*): a survey of mortality and review of the literature. Vet. Rec., 128(11): 245-249.

12- Khalil, L.F. and Abdul-Salam, J.(1985). Helminth parasites of the hedgehog, *Hemiechinus auritus* in Kuwait with description of two new nematodes *Seuratum kuwaitensis* and *Spirura auriti*. J. Univ. Kuwait (Sci.),12:113-127.

13- Lamon, C. and Greer, G.J.(1986). Human infection with an anoplocephalid tapeworm of the genus *Mathevotaenia*. Am. J. Trop. Hyg., 35(4):824-826.

14- Maertens, J.; Vrebos, M. and Boogaerts, M.(2001). Asseessing risk factors for systemic fungal infections. Eur. J. Cancer Care, 10: 56-62.

15- Mahmoud, S.N. (1974). Incidence and distribution of helminth parasites of the digestive tract of rats and mice of the family Muridae in Baghdad area. M.Sc.thesis, Coll.Sci.,Univ.Baghdad:153 pp.

16- McAllister, C.T.; Trauth, S.E. and Ubelaker, J.E.(1985). *Oochoristica crotaphyti* n. sp. (Eucestoda: Linstowiidae) from *crotaphytus collaris* (Lacertilia: Iguanidae) in northern Arkansas. J. Parasitol.,71(6):803-807.

17- Meggitt, F.J.(1920). A new species of cestodes (*Oochoristica erinacei*) from the hedgehog. Parasitology, 12(3): 310-313.

18- Noor-un-Nisa (2001). Studies on helminth parasites of commensal and field rats in Karachi and some district of Sindh. Ph.D. thesis, Coll. Sci., Univ. Karachi: 215 pp.

19- Prokopic, J.(1971). The life cycle of the cestode *Rodentolepis erinacei* (Gmelin,

1789). Folia Parasitologica (Praha), 18: 27-32.

Reeve, N.J.(1994). Hedgehogs. T& AD Poyser Limited, London, UK.

21- Riley, P.Y. and Chomel, B.B.(2005). Hedgehog zoonosis. Emerg. Infec. Dis.,11(1):1-5.

22- Rosen, T. and Jablon, J.(2003). Infectious threats from exotic pets: dermatological implications. Dermatol. Clin., 21: 229-236.

23- Salih, W.A. (1975). Studies on the protozoan and helminth parasites of some rodents in Mosul district, Iraq. M.Sc.thesis Coll. Sc., Univ. Mosul:146pp.

24- Santa, E.D.(1956). Revision of genus *Oochoristica* Luhe (Cestodes). Ph.D. thesis, Coll. Sci., Univ. Neuchatel: 113 pp.

25- Schmidt,G.D.(1986).Handbook of tapeworm identification. CRD Press, Inc., Florida, 675 pp.

20-

26- Tinnin, D.S.; Gardner, S.L. and Ganzorig, S.(2008). Helminths of small mammals (Chiroptera, Insectivora, Lagomorpha) from Mongolia with a description of a new species of *Schizorchis* (Cestoda: Anoplocephalidae). Com. Parasitol., 75(1): 107-114.

27- Wertheim, G. and Greenberg, Z.(1970). Notes on helminth parasites of Myomorph Rodents from Southern Sinai. J.Helminthol., 14(2): 243- 252.

28- Woodward, D.; Khakhria, R.; Jonson, W.(1997). Human salmonellosis associated with exotic pets. J. Clin. Microbiol., 35: 2786-2790.

29-Yamaguti, S.(1959). Systema helminthum, III: The cestodes of vertebrates. Intersci Publ. Inc. Ltd. New York, 860 pp.

التسجيل الأول للدودة للشريطية *Mathevotaenia erinacei* Meggitt, 1920 من القنفذ ألأذاني *Hemiechinus auritus* Gmelin,1770 في محافظة البصرة, العراق

خالد جميل كاظم الزهيري

فرع الأحياء المجهرية/ كلية الطب/ جامعة ذي قار

الخلاصة

أجريت الدراسة الحالية على ٣٥ عينة من القنفذ طويل الأذن *Hemiechinus auritus* في مناطق عدة من قضاء أبي الخصيب في محافظة البصرة للمدة بين شهر آذار ولغاية شهر أيلول عام ٢٠٠٤. فحصت أمعاء تلك الحيوانات بحثا عن الديدان المتطفلة فيها وكانت النتيجة العثور على نوع واحد من الشريطيات هو *Mathevotaenia erinacei* في أربعة من الحيوانات المفحوصة بنسبة إصابة ١١,٤ % شخصت هذه الشريطية اعتمادا على التشابه مع قياسات الوصف الأصلي لها المسجل في العالم , كذلك عملت مقارنة لقياسات كلا العينتين.يعد وجود هذه الشريطية في الدراسة الحالية هو التسجيل الأول لها في العراق.