World Journal of Pharmaceutical and Life Sciences
WJPLS
www.wjpls.org
SJIF Impact Factor: 4.223

RECORDING THREE SPECIES OF CESTODES OF THE FAMILY HYMENOLEPDIDAE (FIMBRIARIOIDES INTERMEDIA; MAYHEWIA CROVI; DIPLOGYNIA OLIGORIHIS FROM DIFFERENT SPECIES OF AQUATIC BIRDS IN IRAQ

Altamemy A. K. Aakool and Huda Mohanna*

Wasit University, College of Science, Department of Biology, Iraq.

***Corresponding Author: Huda Mohanna**

Wasit University, College of Science, Department of Biology, Iraq.

Article Received on 20/09/2017 **Article Revised on 09/10/2017** **Article Accepted on 30/10/2017**

ABSTRACT

Collected different species of aquatic birds from different regions of wasit province in Iraq during the period between September 2016 to April 2017, a total number of birds was 132 birds, 62 of them were infected with different species of Platyhelminthes parasites. the results of study showed isolation and identification three species of cestode for first time in Iraq Including (*Fimbriarioides intermedia, Diplogynia oligorichs, Mayhewia crovi*) isolated from *Himantopus himantopus* , *Chettusia leucura*, *Lobivanellus incidus aginar*, recorded the percentage of infection to each parasite, and intensity , the maximum percentage of infection was recorded in *Chettusia leucura*(83.3%) and *Himantopus himantopus*(76.6%), and Lobivanellus incidus was (37.7%). in addition to recorded variation of infection between the male and females of birds, recorded maximum percentage of infection in the males of *Himantopus himantopus* (76.6%) and minimum of infection was recorded in female of *H.himantopus* (23.3%), Chettusia leucura 666.6% and female 27.7% and Lobivanellus incidus aigner (50%) and female (50%) all parasites species was measured and described.

KEYWARDS: *Fimbriarioides intermedia, Himantopus himantopus, Diplogynia oligorichs, Chettusia leucura,* Platyhelminthes.

INTRODUCTION

The study of Platyhelminthes parasites of aquatic birds is one of the most interesting features of natural history, in addition to, the economic importance of aquatic birds has negative impact on health of human and animals, they act as intermediate host or reservoirs to different species of parasites, there are 27 orders and 8600 families of birds distributed in 30,000 species between wild and domestics; they are considered important source to animal protein and play important role in biochemical control through the feeding on many of arthropods which cause many disease to human and animals Prevalence of parasites in aquatic birds is probably associated with[1] areas where parasite vectors are abundant in addition, many important environmental factors which affecting on parasite prevalence in aquatic area under different environmental conditions, including vector monitoring and abundant of planktons, which caused negative impact on the population of birds[2] The infections of aquatic birds with Platyhelminthes occur because these parasites require invertebrates as intermediate host to complete their life In spite of the importance of aquatic birds as source of protein for inhabitants of South Iraq,[3] they transmit some of parasitic infections to wild and poultry birds,[4] Aquatic birds are found in marshes because most of people work as hunters and fishers. In addition to consideration as important protein source There are some factors that help to cause variable infection of aquatic birds including host specificity, behavior of host feeding (Mollusca or planktons), and birds isolation from its populations[5] 2013).The seasonal changes and alteration of ecosystem also effect on parasitic infection of aquatic birds. Therefore, in winter and autumn the infection increase because of food abundance while in summer it decrease because of high temperature,[6] Aquatic birds contribute to spreading of zoonotic diseases in rural places especially among children and limited income people. Many habits assist to cause infections such as malnutrition, eating undercooked meat, and poor sanitation etc.[7] The commonplace effects of parasitism include damage of the host tissue for completion of host on food . such as Hymenolepidea in digestive tract of birds causes mucus inflammation in intestine. This is reflected negatively on bird health and production,[8] The pathological effects of Platyhelminthes in aquatic birds involve especial organs such as liver, intestine and esophagus. It causes change in epithelial tissue of esophagus, ulceration, destruction, erosion and necrosis in most epithelial lining of the small intestinal villi, beside decreasing in number of the goblet cells.[9]

MATERIAL AND METHODES

Isolation of intestinal helminthes

In laboratory, high dose of anesthesia (chloroform) used to killing a live birds, dissecting by using very sharp scalpel to make longitudinally abdominal incision after removing the feathers, examine internal cavity and viscera grossly and using magnifying glass to observe any damage ore effect on external surface on elementary tract and obtain parasites where presence. douching the internal cavity by normal saline and collecting water washing in petry dish, examine under dissection microscope. The elementary tract removed and divide to four portions. (esophagus, gizzard, intestine and cloacae) in addition to liver and bile duct; each organ preserved in 85% normal saline till to open longitudinally by scalpel.

Staining and fixation

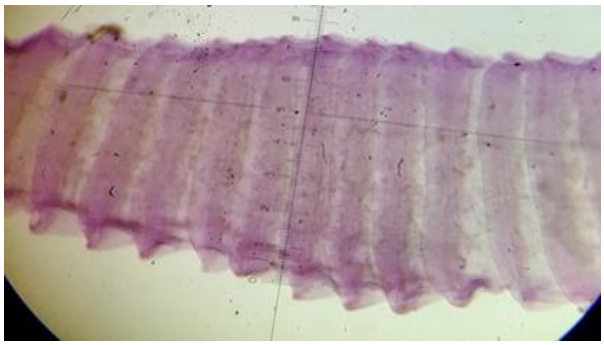
After measuring the lengths of parasites, the cestodes divided in to pieces, scolex, mature and gravid proglottides. Stained by using acid Acetocarmine stain according to Garcia and Ash (1979).putting several drops from the stain on the samples by dropper in the petry dish for one hour with constant examination of stained samples until acquiring appropriate stain, removing over pigment by adding add a few drops of hydrochloric acid(HCL), then isolate the scolex and rest stained pieces and placed between two glass and tied by using the rubber bands, then was placed in alcohol 70% ethyl for 24 hours at room temperature, The two glass was opened and put in 70% alcohol , and then put it through a series dilution of alcohol (80%-90%-100%) For 30 mins for each concentration and then transferred to alcohol absolute mixture and xylene (1:1) for minutes and then put it in the xylene for 1-3 minutes, then put the pieces on a clean glass slide and fixed on glass slide by Canadabalsam.

RESULTS AND DISCUSSION

***Fimbriarioides intermedia* (Fuhrmann, 1913)**

Adult cestodes belong to Hymenolepdidea, the length of strobila between (150_300) (180.5) mm, and width (3_5)mm. characterized by having Pseudoscolex, and this most important features to this parasite. the pseudoscolex lack from hooks, armed rostellum, The length of pseudoscolex between (2_3mm) and (2_2.7) width. Complete segmentation, a craspedote Proglottides, number of strobila between (72_113) Proglottides, the measure of Proglottides between (0.7_0.8) width and (0.6_0.8) length the length of gravid Proglottides between (0.5_0.7) (0.85)mm , width (0.5_0.9) (0.95) mm. has very small pseudoscolex poorly developed the genital poor are primordial, The testes appear in Ovid shape and lobed in appearance. cirrus pouch is fusiform. visible seminal vesicle , Ovary appear in reticulate shape, vitelline gland lies in median. position, and appear in lobed shape, Uterus is reticulate, The genital pore opening in large genital atrium and ventral to cirrus. Recorded many species in Africa, East of Asia and Iran.(Simon and Daneil, 2009) isolated F. Africana in south Africa from Anatida family (*A.nascapensis, A. Undulata*) with percentage of infection 50% and intensity (5). Differs from genus of current study F. intermedia in number of testis, having 2 testis per proglottids . The cirrus pouch posterior to vitelline glands. (Geranga, 1976) Isolated another species of the genus *F. tadornae* from Sheldrake bird in central of Kazakhstan and describe the period between the oncospher invasion and reach to cysticercoids was 12-13 day, the author also studied the environmental factors such as temperature and misty that effects on this process.

Fimbriarioides intermedia, scolex (4x).

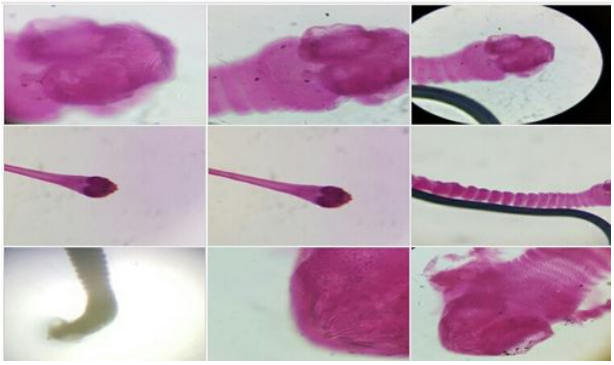


Proglottids of *Fimbriarioides intermedia* (20x).

Mayhewia corvi (Mayhewia, 1925)

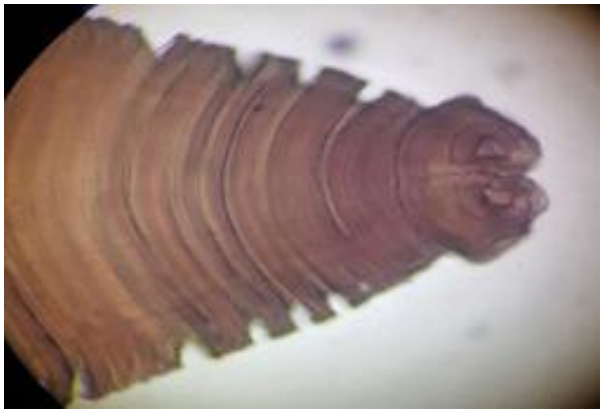
Small cestodes belong to Hymenolepdidea median in size, The length of strobila (220_380) (258) mm. scolex provided with muscular structure like wings, with four suckers, unarmed rostellum, length of scolex between (106_200) (126) mm, width (200_235) (255)mm. The rostellum has a circle of (8_10) hooks, The length of hooks between (0.02_0.05)(0.04) micron. numerous Proglottides, a craspedote, transversely and elongated, with thick tegument. the length of proglottides (0.26_0.62) (0.17) mm. and width (0.10_0.29) (0.16) mm. has Inner longitudinal bounded muscle. Has numerous testes arrange in tringle or transverse line. Each 3testes in each proglottides, cirrus pouch extending behind poral execratory stem, Internal and external seminal vesicles, with muscle structures to form ring shape. accessory sac is not distinguished. ovary is reticulate. Cirrus sac contain cirrus pouch the length of cirrus (63_60)micron. vitelline gland is posterior to

ovary. Median in size. uterus beginning as a transvers or U_ shaped tube. (Yamagutti, 1959).This parasite recorded for the first time in Iraq at the level of genus and species; including many species studied and recorded in India, Spain and USA. Based on (Yamagutti, 1959) this genus including many species (M. ablilili, M. nebraskensis, M. yamagutti, 1956, M. vulgari, M. clerci, M. filta, M. gaungi M. chiapaensis ,M. nebraskensis, Mayhewiakavini, M. serpentulus M. leovine and M. gaugi), parasitic in wild and aquatic birds spend the larval stage in sea fish.(Ahmad and Tanveer, 2013) recorded another species Mayhewiakavini from Corvusmonedulaan in India but never mentioned the measurements therefore isn't possible to make comparison between two species. Comez and Roman, (1980) isolated M. ababili from Himantopus rustica in Canada measured and illustrated and considered as new species in Canada.



Diplogynia oligorichis (Moplestone, 1922).

Adult cestodes large in size belong to Himanlepdiidae. Has thick cuticle, The length of worm between (7_14)cm. the number of Proglottides 143.has large head contain internal groove divided the interior part of head in two parts . with circle of hooks arrange in crown form. Length of hooks 34micron. complete segmentation. The width of Proglottides more than length. The length of Proglottides (0.7_0.14), width (0.14_0.28), unsegmented neck (356)mm. the body is provided with crystalline rods in each side of body begin from immature Proglottides behind the head to terminal end of Proglottides and this considered as classified features to this genus. Don't mentioned any function to this rods. Has rounded scolex, long of scolex (346)mm, width (340)mm .provided with four suckers, the position of suckers nearby interior margin of head. s double male and female gentile pores. few testes divided into groups each group of testes lies in median of execratory stems. Gentile duct opening in dorsal of excretory stems, Has internal and external seminal vesicle. Has aperture bilateral system. The ovary small in size. Uterus is transverse labeled sac, vagina opening into gentile atrium. This parasite recorded for first time in Iraq at level of genus and species the synonym name of this genus *Citotaenias* and transferring in 1944 by (Davis, 1944) to *Diplogynia* but this name don't mentioned by (yamagutti, 1959) Based on Yamagutti, 1959 this parasite belong to family Himanlepdiidae, including four species D. anestrini, D. acuminatum, D. americans, D. oligurichs. Bear, (1969) isolated this parasite from Anatida (geese and ducks) in Australia, another species *D. acuminatom*, which described depending on absence of row hooks and the measured of rostellum (0.077- 0.0.97), this disagreement with genus of current study (0.057- 0.098).Classified genus D.oligirichs depend on length of hooks, presence of crystalline rods in each side of body from the interior proglottids to terminal segment and this agreement with description of (Willeres and Olsen, 1969; Yamagutti, 1959; Czaplinski and Ryzikov, 1966).



Diplogynia oligorichis, scolex (4x).

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