HISTOPATHOLOGICAL EFFECTS OF *Cotugnia* sp. ON INTESTINE OF WILD PIGEONS (*COLUMBA LIVIA*) AT BASRAH CITY

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Abstract

The wild and domestic pigeons *Columbia livia* can be infected with different parasites at the world and one of them, cestoda. This work focusing about the histopathological changes of intestine which infected naturally with the cestoda *Cotugnia* sp. and the results was: present of inflammatory cells of lamina properia of vilia, a lymphatic reaction in the serosa of small intestine. An agreggate of lymphocytes found at lamina properia and muscularis externa of small intestine, an inflammatory cells in lamina properia , interstaila edoma in muscularis externa, small lymphatic agreggate in dillated veins in muscularis externa. A vaculated epithelium of mucosal glands in lamina properia recognized in, other was agreggate of lymphocytes in lamina properia . A clear scolex of the parasite *Cotugnia* sp. with suckers found surrounding with agreggation of lymphocytes as inflammatory reaction and an elongation in villia of small intestine, and other showed an agreggation of lymphocytes in serosa.

INTRODUCTION

The common name at the world pigeons with a cosmopolitan distribution, the scientific name of wild and domestic pigeons is *Columbia livia* (Sari *et al.*, 2008), Merques *et al.*, (2007) pointed an taxonomical aspects that these birds related to the order Columbiformes which can be found in every town and city around the world . And, Ghazi *et al.*, (2002) found that pigeons (the wild one not domesticated) with high prevalence of gastrointestinal helminthes and protozoan infections. So, this parasitic infection can transmitted to human by fecal dust from cages or from sites that been contaminated with dry feces, urine and other droppings (Marques *et al.*, 2007). The most important disease occurrence of different species of pigeons and poultry is endoparasites especially the cestode (Dranzoa *et al.*, 1999), which dilate the intestine when it was a heavy infection and cause pathological changes like, nodule and severe enteritis. The resultant situation leads to loss of body weight, retarded growth, reduced egg production, weakened body resistance and sometime death (Borghare *et al.*, 2009). *Columbia livia* are naturally spread in most cities.
and villages in Iraq and studied by different researchers and the first study were done by (Mustafa, 1984) which isolated different parasites as the first time in Iraq and Basrah city. Other like, Al-Bakry, (2009) studies about the protozoal infection between wild pigeons. Al-Bayati (2011) found that pigeons from various regions in Diyala province with different cestodes infection with total prevalence were 73.01% and three genera of cestodes were diagnosed and identified *Aporina delafondi*, *Cotugnia intermedia* and *Raillietina microcantha*.

As many researchers recorded that the most internal parasites that infect birds was tapeworms, causing various damage leading to loss of hosts especially at sever infection (Kinsella *et al.*, 1973). Furthermore, more than 4000 species of tapeworm fauna from invasive 1400 type birds belonging to three different families that are very important like; Hymenolepidae, Davainidae and Dilepididae (Calnek *et al.*, 1991).

*Cotugnia spp.* A cestoda related to the Davaineinae with rostellum armed with very small hammer shaped hooks, while, suckers unarmed, the proglottids each one with two sets of reproductive organs, with different species that parasitized at anseriforms, Casuariiforms, Columbiforms, Galliforms, Passeriforms, Psittaciforms (Schmidt, 1986 ).

The aim of this work was to focusing about a histopathological changes of intestine of wild pigeons *Columbia livia* which infected naturally with cestoda *Cotugnia sp.* in Basrah province.

**MATERIALS AND METHODS:**

- **Samples Collection**

A total of (50) willed pigeons (males and females) were collected from different regions at Basrah city, southern Iraq. After the collecting all pigeons were bring and placed in cages and brought to the laboratory of Veterinary Parasitology at the College of Veterinary Medicine in Basrah University for examination.

- **Laboratory Producers**

A procedure by Taylor and Muller, (1971) were done after the sample brought to the laboratory, with lengthwise opining and internal organs were cut off carefully and placed in crystalline dishes with normal saline (0.85%) for washing. After that all parts of digestive system was removed and placed with normal saline, and examined by using dissecting microscope, later, the parasite if found were removed carefully and put it aside. The isolated
cestodes which found in intestine of examined birds was transferred from a tissue to tap water to release it and then it was preserved in 70% ethyl alcohol. After at least 24 hours a microscopic examination was done for morphological, and some cestodes were stained by Alum carmine stain according to (Garcia and Ash, 1979). The results of parasites identified by Iraqi Natural History Research Center and Museum.

**Histopathology**

The infected intestine with cestodes were examined histologically according to (Luna, 1968) with Haematoxyline and eosin and examined under the microscope at x10 to x40 objectives lens.

**RESULTS:**

The most isolated parasites of examined birds were the cestoda *Cotugnia sp.* (Figs. 1, 2, 3, 4), with total number (65) adult worms from total number of examined pigeons (50) and total number of intensity of infection (1.3), the adult showed a clear recognized characters like to the family Davaineidae with double set of genitalia, proglottids very short and linear except the last ones, while, the cirrous pouch subcylindrical and genital pores bilateral. The eggs in parenchymatous capsules and one per capsule. The alum carmine stain showed to be very useful to staining cestodes (Figs. 1, 2, 3, 4).

**Figure (1): Scolex of *Cotugnia sp.* clear four cup suckers with alum carmine stain.**

**Figure (2): Scolex of *Cotugnia sp.* with neck and proglottids with alum carmine stain.**
The histopathological study of intestine with *Cotugnia sp.* infection showed many pathological changes, like, present of inflammatory cells of lamina properia of vilia (Fig. 5). While, Fig. (6) found a lymphatic reaction in the serosa of small intestine. An agreggate of lymphocytes found at lamina properia and muscularis externa (Figs. 7, 8, 9, 10). In Fig. (11: a, b, c, d) an inflammatory cells in lamina properia, interstaila edoma in muscularis externa, small lymphatic agreggate in dillated veins in muscularis externa all these changes at small intestine. A vaculated epithelium of mucosal glands in lamina properia recognized in, other was agreggate of lymphocytes in lamina properia (Figs. 12, 13, 14). A clear scolex of the parasite *Cotugnia sp.* with suckers found surrounding with agreggation of lymphocytes as inflammatory reaction (Fig. 15, 16). An elongation in villia of small intestine (Fig. 17), while, Fig. (18) showed an agreggation of lymphocytes in serosa, but (Fig. 19) recognized artifacts with two agreggation of lymphocytes one in lamina properia and other in muscularis externa.
Figure (5): Transverse section in small intestine of wild pigeon infected with the cestoda *Cotugnia* sp. showed an inflammatory cells of lamina propria. E & H. (10X).

Figure (6): Transverse section in small intestine of wild pigeon infected with the cestoda *Cotugnia* sp. showed lymphatic reaction in the serosa. E & H. (10X).

Figure (7): Transverse section in small intestine of wild pigeon infected with the cestoda *Cotugnia* sp. showed aggregate of lymphocytes in lamina propria and muscularis externa. E & H. (10X).

Figure (8): Transverse section in small intestine of wild pigeon infected with the cestoda *Cotugnia* sp. showed aggregate of lymphocytes in lamina propria and muscularis externa. E & H. (40X).
Figure (9): Transverse section in small intestine of wild pigeon infected with the cestoda *Cotugnia* sp. showed aggregate of lymphocytes in lamina propria and muscularis externa. E & H. (10X).

Figure (10): Transverse section in small intestine of wild pigeon infected with the cestoda *Cotugnia* sp. showed aggregate of lymphocytes in lamina propria and muscularis externa. E & H. (40X).

Figure (11, a): Transverse section in small intestine of wild pigeon infected with the cestoda *Cotugnia* sp. showed inflammatory cells in lamina propria. E & H. (10X).

Figure (11, b): Transverse section in small intestine of wild pigeon infected with the cestoda *Cotugnia* sp. showed inflammatory cells in lamina propria. E & H. (40X).
Figure (11,c): Transverse section in small intestine of wild pigeon infected with the cestoda *Cotugnia sp.* showed interstitial edema in muscularis externa. E & H. (40X).

Figure (11,d): Transverse section in small intestine of wild pigeon infected with the cestoda *Cotugnia sp.* showed small lymphatic aggregation in dilated veins in muscularis externa. E & H. (40X).

Figure (12): Transverse section in small intestine of wild pigeon infected with the cestoda *Cotugnia sp.* showed a vacuolated epithelium of mucosa glands in lamina propria. E & H. (40X).

Figure (13): Transverse section in small intestine of wild pigeon infected with the cestoda *Cotugnia sp.* showed aggregate of lymphocytes in lamina properia. E & H. (10X).
Figure (14): Transverse section in small intestine of wild pigeon infected with the cestoda *Cotugnia sp.* showed aggregate of lymphocytes in lamina properia. E & H. (40X).

Figure (15): Transverse section in small intestine of wild pigeon infected with the cestoda *Cotugnia sp.* showed the scolex of parasite with clear suckers and surrounding with lymphocytes. E & H. (40X).

Figure (16): Transverse section in small intestine of wild pigeon infected with the cestoda *Cotugnia sp.* showed the scolex of parasite with clear suckers and surrounding with lymphocytes. E & H. (10X).

Figure (17): Transverse section in small intestine of wild pigeon infected with the cestoda *Cotugnia sp.* showed elongated villa. E & H. (10X).
DISCUSSION:

Wild pigeons can be infected with different parasites, because of their habitat, feeding and contact with different environmental contaminated materials. This study focused on the pathological changes of intestine of pigeons which infected naturally with the cestoda Cotugnia sp.. The intensity of infection (1.3), this was varied from one region to another because of many factors like; the strain of pigeons, the behavioral of feeding, the habitat and the environmental factors. The first record of this cestoda Cotugnia sp. from wild pigeons in Iraq and Basrah city were done by (Mustafa, 1984).

Krone and Cooper,( 2002) noticed that parasites which found in different birds may be lead to a serious problems reach to death, furthermore, some parasites were responsible for low bird growth rates, or losses of birds or decreased egg production. By the other hand, Baure, (1961) record that each parasite have a degree of adverse impact on host and may be a change in texture of tissue, or take change in overall impact. While, Hungerford, (1969) found that the parasites occurs a damage to their hosts like; injurer and metabolic outcomes affecting
enzymes and hormones of the host or deny pant of their food and negative impact of the parasite does not stop at this level. Also, may attack the parasite tissue.

The Result of the current study showed an inflammatory cells of lamina properia of vilia, a lymphatic reaction in the serosam an aggreggate of lymphocytes at lamina properia and muscularis externa of small intestine, an inflammatory cells in lamina properia, interstaila edoma in muscularis externa, small lymphatic aggreggate in dillated veins in muscularis externa all these changes at small intestine. A vaculated epithelium of mucosal glands in lamina properia recognized in, other was aggreggate of lymphocytes in lamina properia. This results may could be as a host immune defence against the parasites as an antigen. This result is agreement milt Hungerford, (1969) which showed that intestinal with reactive change of gland and mixed inflammatory cells and infiltration lymphocytes with degenerative cell (Necrosis).

A clear scolex of the parasite *Cotugnia sp.* with suckers found surrounding with agreggation of lymphocytes as inflammatory reaction found under this study which was as a result of antigen entering and the inflammatory cells surr onding the parasites and seperat it from the intestinal tissues as an immune response reaction.

Mustafa (1984) recorded that the pathological effects depend on the size of the parasites and found by her study that the cestoda in the intestine can cause necrosis, destruction of intestinal tissues, villa atrophy and inflammatory cells aggregation.

AKNOLEDMENT:

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REFERENCES: