ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Histopathological Changes in Abomesum Infested With *Heamonchus contortus* In Sheep In Basrah City

Huda A. Abbas[1], Suzan A. Al-Azizz[1]*, and Salih K. Majeed[2].

1-Dept. Of Microbiology And Veterinary Parasitology, 2- Dept. of Pathology and Poultry Pathology, College of Veterinary Medicine, University Of Basrah, Iraq

ABSTRACT

Heamonchus contortus (order strongylida) is a common parasitic nematode infecting small ruminants and causing significant economic losses worldwide. *H. contortus* are consider the most economically important parasite which infect cattle, goats and sheep occur in nearly all subtropical and temperate areas of the world. This study was conducted to detected the histopathological changes in the abomasum of the infected sheep in Basrah city and found different changes, like, a stomach glandular region with fibrosis at the base of lamina properia, Infiltration of mononuclear cells at the base of lamina properia, a debris of parasite with completely fibrosis in glandular tissue of abomasum. Some examined infected abomasum showed congested blood vessels in the sub mucosa and, Degeneration of mucus gland associated with infiltration of mononuclear cells, Edema in the lamina properia. It can be seen the part of parasite penetrated mucosa and submuocosa surrounding with inflammatory cells, while, focusing on part of parasite in submuocosa with inflammatory cells.

Keywords: *Heamonchus contortus*, Abomasum, Basrah City, Parasitic Nematoda.

Corresponding author

ISSN: 0975-8585

INTRODUCTION

Haemonchosis is a serious economic disease which may result in rapid death, severe anemia and depletion for their hosts (cattle, sheep and goats) [1]. *Heamonchus contortus* is a major pathogenic nematoda in the abomasum of sheep and goat and other ruminants worldwide [2], and between the different gastrointestinal nematodes *H. contortus* is considered as the most prevalence genus [3]. Why? because of blood losses which is considered as the main source of nutrients for *Heamonchus* spp., so, infection with this parasite can cause mainly in young animals anemia, weight loss that in some causes result in death [4]. Furthermore, H. *contortus* consider as a major pathogen in ovine throughout the temperate and tropical regions of the world and is a significant cause of production loss and debilitating infection with this parasite is most commonly seen in young animals while resistance to infection found in older ovine [5].

Female worms are 18-30 mm long and easily recognized by appearance of the white ovaries and uteri twisting for the length of the worm around a red blood-filled intestine and male are 10-20 mm long and uniformly reddish-brown with copulatory bursa as a barbs poles [6].

The fourth stage larvae and adult stage of this worm feed and suck blood and movement in the site of infection leave wounds that hemorrhage from the abomasal wall of the host, with total blood sucking *H. contortus* about 0.5 ml blood per day in ovine according to [7].

The present study was focusing and determine the histopathological changes in the abomasum of the slaughtered sheep which infected with *H. contortus*.

MATERIAL AND METHODS

Samples Collection:

A random visiting to the Basrah slaughter house was carried out between May 2016 till February 2017, for takeoff the abomasums of slaughtered sheeps, each one were put in clean plastic bag and bring to the laboratory of veterinary Parasitology at College of Veterinary Medicine in Basrah University.

Isolated Nematoda:

Each abomasum samples was examined carefully under table lamp and each parasites were isolated by fine needle and put in clean petri dish with tap water, after that, all parasites were examined under dissected microscope and *H. contortus* were isolated, and stored in ethyl alcohol (70%). Some worms were selected for microscope examination for identification based on morphological characters . And about two cm piece of infected abomasum were fixed in formalin 10% and prepared for histopathological examination and stained with Haematoxyline and eosin then examined by the light microscope according to the method by [8].

RESULTS AND DISCUSSION

The results showed in Fig. (1) the distribution of *H. contortus* in the lumen of abomasum, While, (Fig. 2) showed the posterior part of *H. contertous* male with copulatory bursa and Y shape. By the other hand, histopathological changes on mucosal layer of the examined infected abomasum showed different changes, like, A stomach glandular region with fibrosis at the base of lamina properia. (Figs. 3; 4), Infiltration of mononuclear cells at the base of lamina properia (Fig.5) , in addition , A debris of parasite with completely fibrosis in glandular tissue of abomasum (Fig. 6).While, a debris of parasite with completely fibrosis in glandular tissue of abomasum with inflammatory cells (Fig. 7) and Showed aggregation of inflammatory cells in the sub mucosa. (Fig. 8). In Figs. (9; 10) Degeneration of mucus gland associated with infiltration of mononuclear cells, while, (Figs. 11; 12) Edema and inflammatory cells in the lamina properia. Edema, inflammatory cells and congested blood vessels in the lamina properia with or without congestion can be found in (Figs. 13; 14; 15; 16; 17; 18; 19; 20). But in Figs. (21; 22) record a section of adult *H. contortus* parasite with gut and testes. In Figs. (23; 24) found a part of parasite penetrated mucosa and submuocosa surrounding with inflammatory cells.

ISSN: 0975-8585

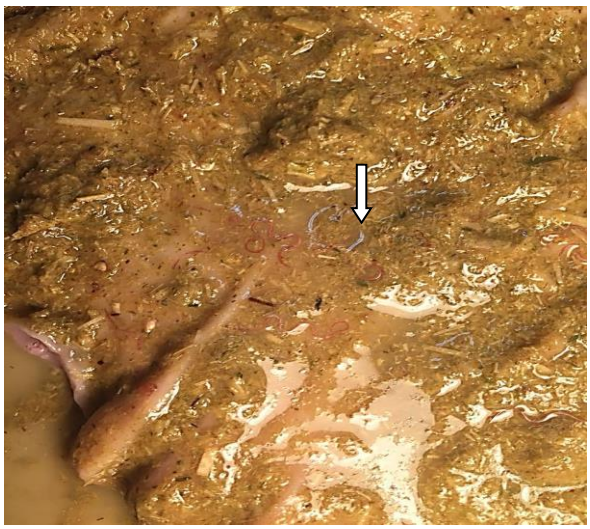

Figure (1) : *Heamonchus contertous* from abomasum of infected sheep

Figure (2): Male of with *Heamonchus contertous* copulatory bursa with Y shape

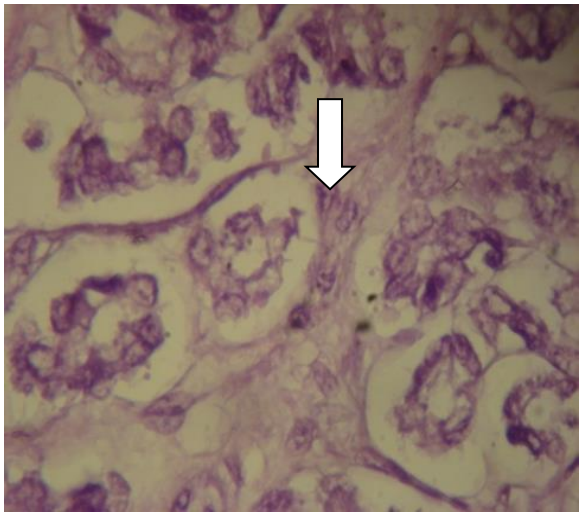

Fig. (3): A stomach glandular region with fibrosis at the base of lamina properia. Eosin and Haematoxyline. 10X.

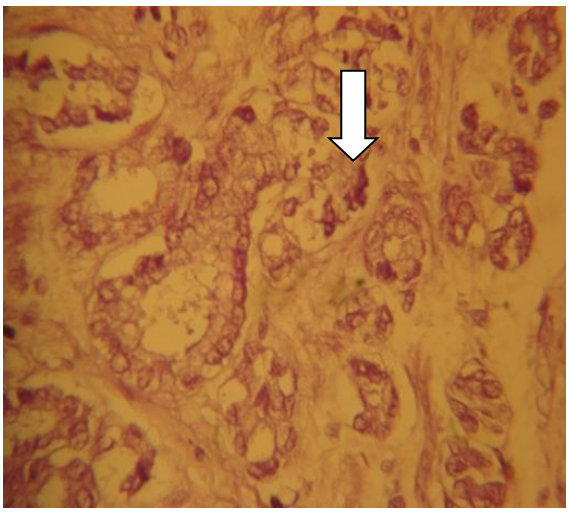

Fig. (4): A stomach glandular region with fibrosis at the base of lamina properia. Eosin and Haematoxyline. 10X.

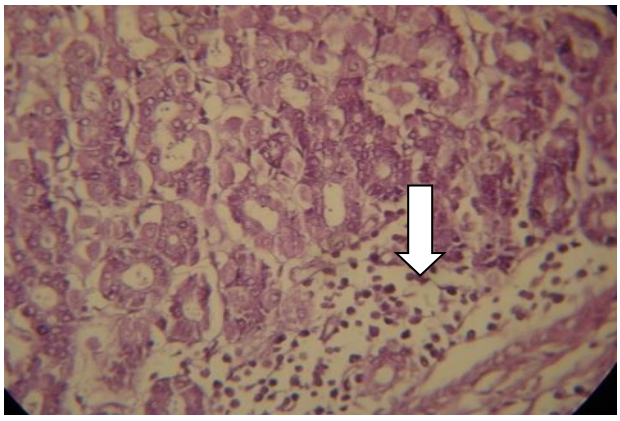

Fig. (5): Infiltration of mononuclear cells at the base of lamina properia. Eosin and Haematoxyline. 10X.

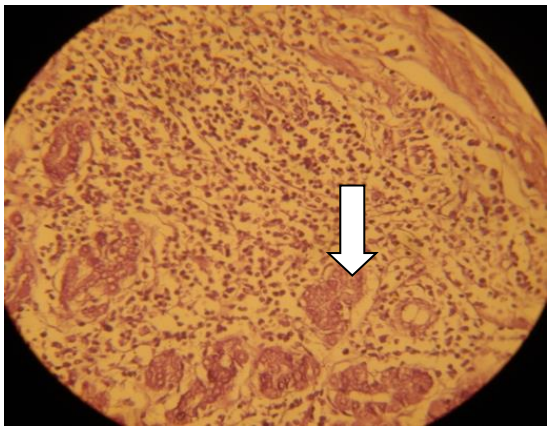

Fig. (6): A debris of parasite with completely fibrosis in glandular tissue of abomasum. Eosin and Haematoxyline. 10X.

ISSN: 0975-8585

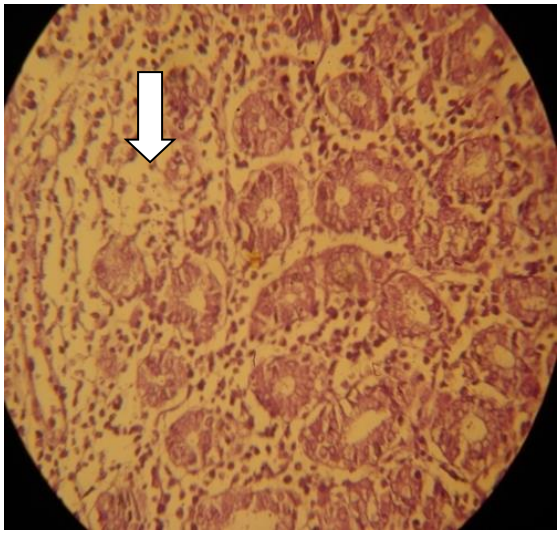

Fig. (7): A debris of parasite with completely fibrosis in glandular tissue of abomasum with inflammatory cells. Eosin and Haematoxyline. 10X.

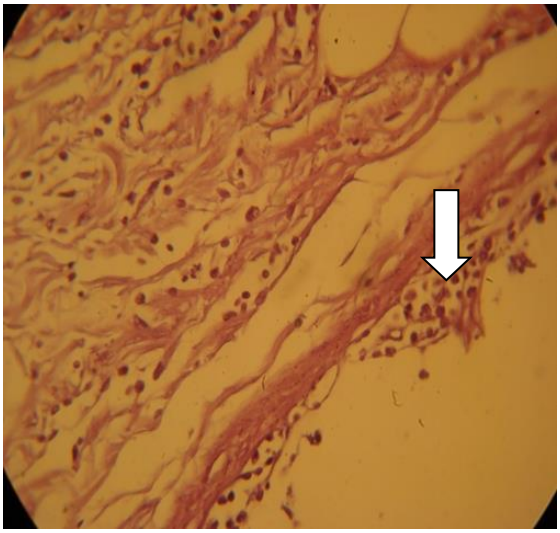

Fig. (8): Showed aggregation of inflammatory cells in the sub mucosa. Eosin and Haematoxyline. 10X.

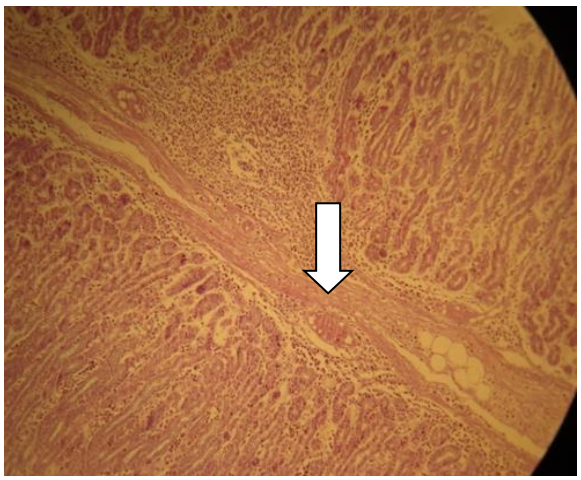

Fig. (9): Degeneration of mucus gland associated with infiltration of mononuclear cells. Eosin and Haematoxyline. 10X.

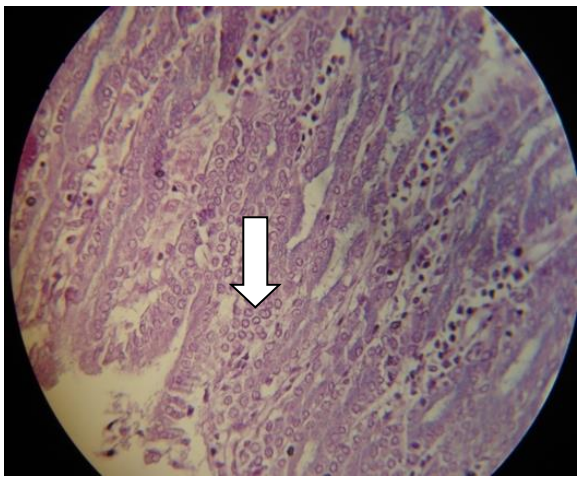

Fig. (10): Degeneration of mucus gland associated with infiltration of mononuclear cells. Eosin and Haematoxyline. 40X.

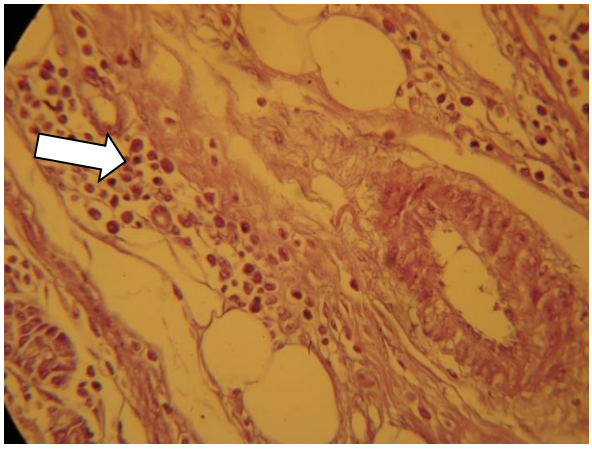

Fig. (11): Edema and inflammatory cells in the lamina properia. Eosin and Haematoxyline. 10X.

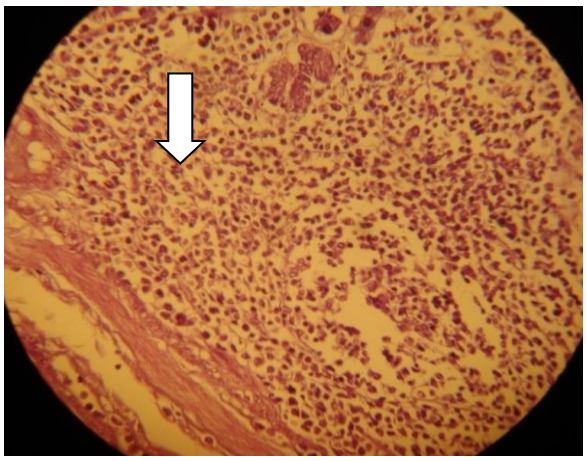

Fig. (12): Edema and inflammatory cells in the lamina properia. Eosin and Haematoxyline. 10X.

ISSN: 0975-8585

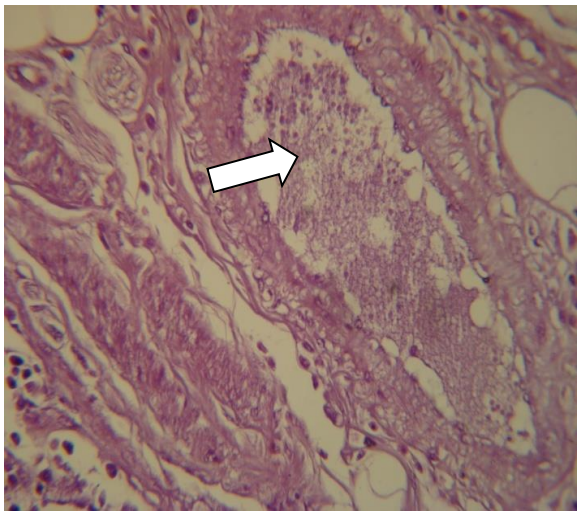

Fig. (13): Edema, inflammatory cells and congested blood vessels in the lamina properia. Eosin and Haematoxyline. 10X.

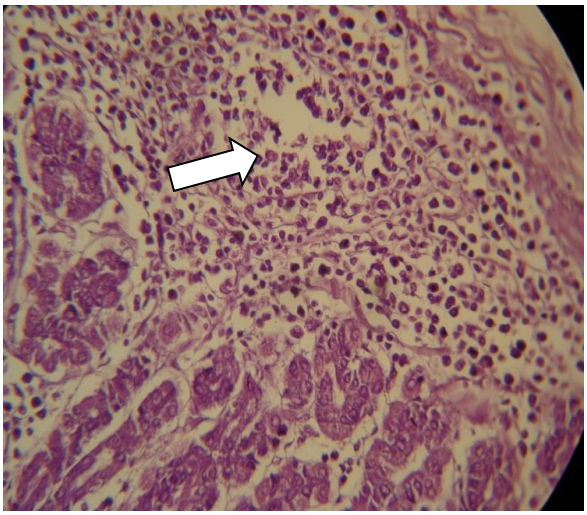

Fig. (14): Edema and inflammatory cells in the lamina properia. Eosin and Haematoxyline. 10X.

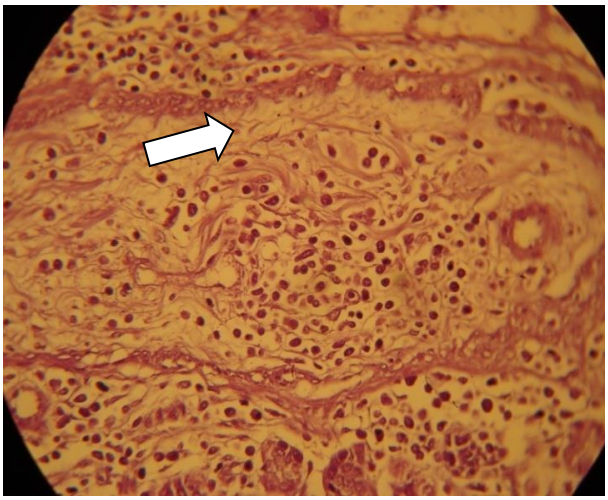

Fig. (15): Edema and inflammatory cells in the lamina properia. Eosin and Haematoxyline. 10X.

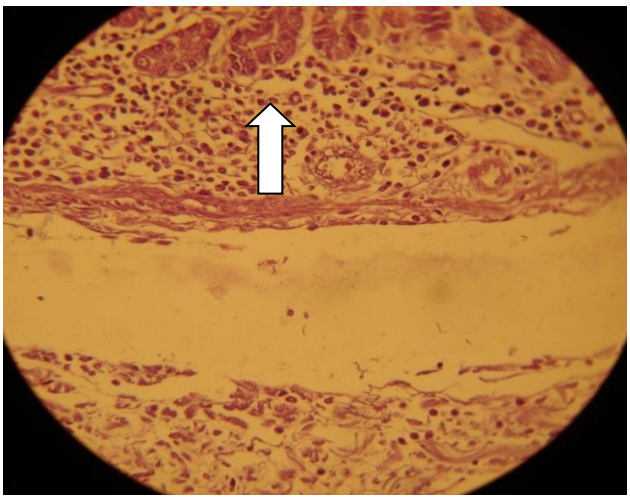

Fig. (16): Edema and inflammatory cells in the lamina properia. Eosin and Haematoxyline. 10X.

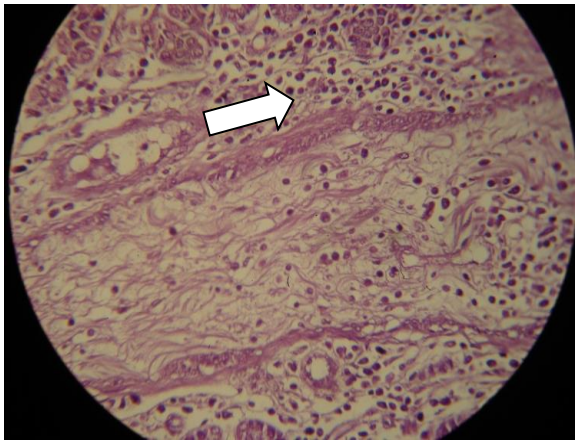

Fig. (17): Edema and inflammatory cells in the lamina properia. Eosin and Haematoxyline. 10X.

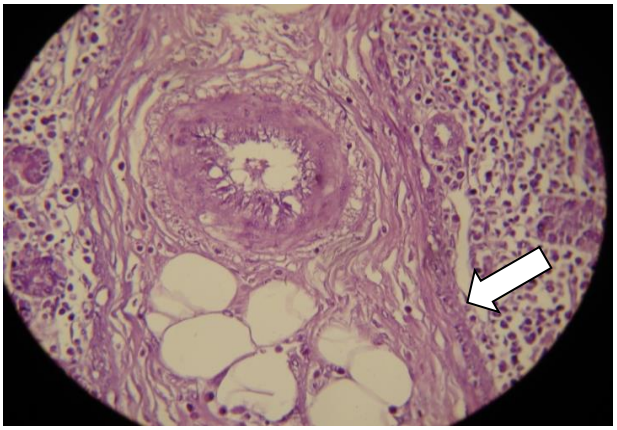

Fig. (18): Edema and inflammatory cells in the lamina properia. Eosin and Haematoxyline. 10X.

ISSN: 0975-8585

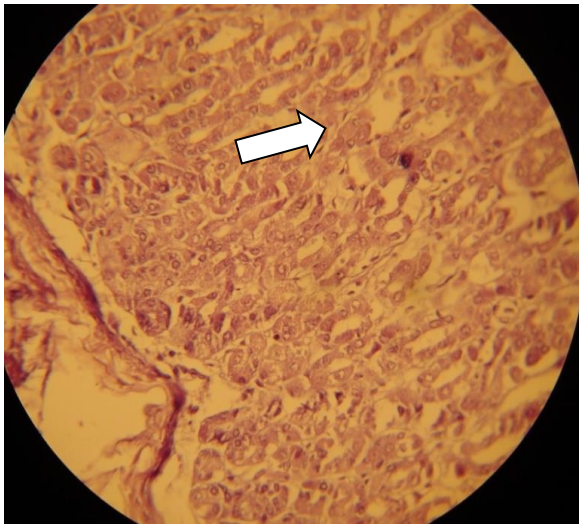

Fig. (19): Edema and inflammatory cells in the lamina properia. Eosin and Haematoxyline. 10X.

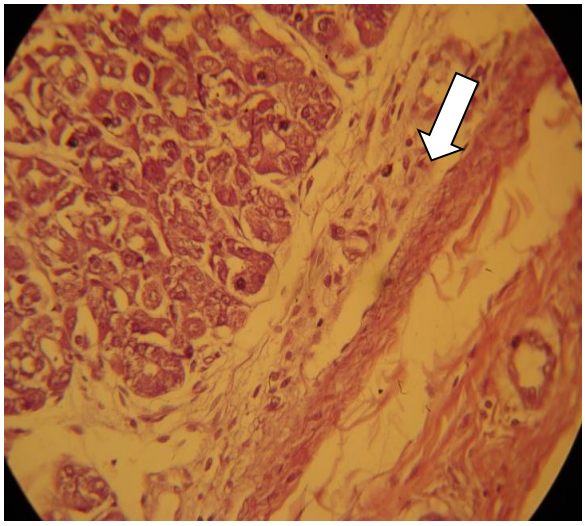

Fig. (20): Edema in the lamina properia. Eosin and Haematoxyline. 10X.

Fig. (21): Section of adult parasite with gut and testes.

Fig. (22): Section of adult parasite with gut and testes.

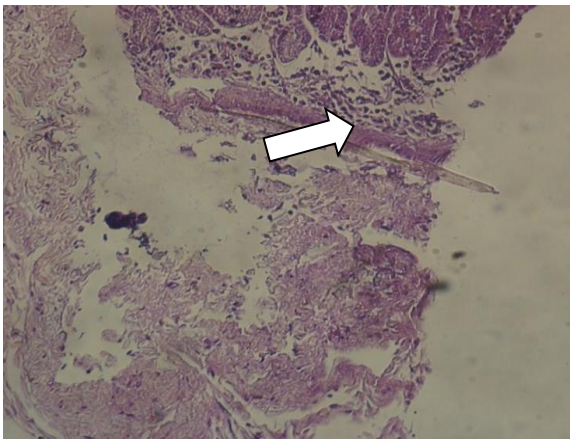

Fig. (23): part of parasite penetrated mucosa and submuocosa surrounding with inflammatory cells. Eosin and Haematoxyline. 10X.

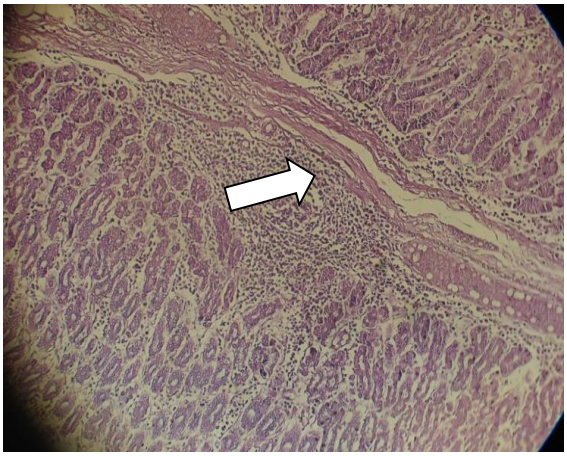

Fig. (24): part of parasite in submuocosa with inflammatory cells. Eosin and Haematoxyline. 10X.

The results showed infection of the fourth stomach of the sheep with *H. contortus* and severity of infection varied from one animal to another and diagnosed grossly the worms especially the females through the shape of from ovaries coiled around the intestine and which gives the distinctive shape known barber pole.

The reasons of histopathological changes that accompanied this infection probably due to the attachment of the parasite with abomasum mucosa and feeding then left a bleeding spots and attach to another region, also the immune responses which occur in infection areas, sometime a secondary bacterial infection were found in the bleeding spots may be make this histopathological changes.

The most present results were agreement with different authors like, [9-12] which talking about the result of abomasum which infected with *H. contortus,* also, coincided some authors results [13-18] which agreement with the theory that *H. contortus* cause many pathological changes because of their feeding, moving, wasting product and may be causing death to the infected sheep when it is found in hug number.

In conclusion, nematoda parasites cause different pathological changes when found in the organ, why? Because of their size, feeding, type of attach organs at the mouth, and one of them *H. contortus* and when it is remain without treated release death to their host.

REFERANCES

[1] Urquhart GM, Armour J, Duncan J L, Dunn AM, and Jennings FW . Veterinary Parasitology. Second Edition, Blackwell Science Ltd, (1996).

[2] Troell K, Waller P, Hoglund J. The development and overwintering survival of free living larvae of *Haemonchus contortus* in Sweden. J Helminthol., (2005), 79: 373-379.

[3] Fazial ACM and Rajapakse R PVJ. Prevalence of coccidian and gastrointestinal nematode infections in cross bred goats in the dry areas of Sirlanka Small Ruminant Res., (2001), 40: 233-238 .

[4] Bakker N, Vervelde L, Kanobana K, Knox D P, Cornelissen A WCA, Vries E, and Yatsuda A P . Vaccination against the nematode *Haemonchus contortus* with a thiol binding fraction from the excretory secretory products(ES). (2004).

[5] Onyenwe IW, Onwe C, Onyeabor A, Onunkwo JI . Abattoir-Based Study of the Susceptibility of Two Natural Infected Breeds of Goat to *Haemonchus contortus* in Nsukka Area of Enugu State, Nigeria. Animal Research International, (2005), 2: 342-345.

[6] Love SC, Hutchinson GW. Pathology and diagnosis of internal parasites in Ruminants. (2003). University of Sydney, Australia.

[7] Ijaz M, Khan MS, Avais M, Ashraf K, Ali MM, et al. Infection rate and chemotherapy of various helminthes in diarrhoeic sheep in and around Lahore. The J Anim PltSci, (2009), 19: 13-16.

[8] Luna L G. Manual of histological staining method of armed forces institute e of pathology. 3rd. Ed., (1968). Mc- Graw- H ill Book Co., New York.

[9] Omer F A. Pathogenesis of Haemonchus contortus in naturally infected Sudanese desert sheep. phD thesis. Department of pathology. Faculty of Veterinary. University of Khartoum. Sudan, (1999). 1-2.

[10] Scott I, Dick A, Irvine J, Stear M J, Mckellar Q A. The distribution of pepsinogen within the abomasum of cattle and sheep infected with Ostertagia spp. And sheep infected with Haemonchus contortus. Vet. Parasitol. (1999), 82: 145-159.

[11] Mir R A, Chishti M Z and Zarger M A. Clinico pathological changes in sheep experimentally infected with Haemonchus contortus. World Journal of Agricultural Sciences. (2007), 3(5): 562-566.

[12] Tehrani A, Javanbakht J, jani M, Sasani F, Solati A, Rajabian M, Khadivar F, Akbari H, and Mohammadian M. Histopathological study of Haemonchus contortus in Herrik Sheep Abomasum. J. Bacteriol Parasitol., (2012), 3:5.

[13] Bendixsen T, Emery D L, Jones WO. The sensitization of mucosal mast cells during infections with Trichostrongylus colubriformis or Haemonchus contortus in sheep. Int. J. Parasitol. (1995), 25(6): 741-748.

[14] Ballc A, Bowles V M, Meeusen ENT. Cellular profiles in the abomasal mucosa and lymph node during primary infection with Haemonchusn contortus in sheep. Vet. Immunol. Immunopathol., (2000), 75: 109-120 .

[15] Perez J, Garcia PM, Hernadez S, Mozos E, Camara S, Martinez-Moreno A. Experimental haemonchosis in goats: effects of single and multiple infections in the host response. Vet. Parasitol., (2003), 111: 333-342.

[16] Huntley JF, Jackson F, Coop RL, Macaldowie C, Houdijk JGM, Familton AS, Xieh HL, Stankiewicz M, Sykes AR. The sequential analysis of local inflammatory cells during abomasal nematode infection in peri parturient sheep. Vet. Immunol. Immunopathol., (2004), 97: 163-176.

[17] Bricarello PA, Gennari SM, Oliveira-Sequeira TCG, Vaz CMSL, Goncalves De G I, Echevarria FAM. Worm burden and immunological responses in Corriedale and CrioulaLanada sheep following natural infection with Haemonchus contortus. S. Rum. Res., (2004), 51: 75-83. Davidson .

[18] Amarante AFT, Bricarello PA, Huntley JF, Mazzolin LP, Gomes JC. Relationship of abomasal histology and parasite-specific immunoglobulin A with the resistance of Haemonchus contortus infection in three breeds of sheep. Vet. Parasitol., (2005), 128: 99-107

[19] Amarante, A. F. T.; Bricarello, P. A; Huntley, J.F.; Mazzolin, L.P.; Gomes, J.C. (2005). Relationship of abomasal histology and parasite-specific immunoglobulin A with the resistance of Haemonchus contortus infection in three breeds of sheep. Vet. Parasitol. 128: 99-107