The Iraqi J. Vet. Med. 19 & 20 , No.(1), 1995-1996.

PATHOLOGY OF NATURAL LIVER PARASITIC AFFECTIONS IN GOATS

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SUMMARY

This study was designated to evaluate the prevalence of hepatic parasitic lesions in goats and to characterize its pathological (morphological and histo-pathologic) features.

Among a total of 1400 examined goats, the prevalence was 15.07 %. Four types of parasitic affections were reported : 1) Fascioliasis (6.4 %), 2) Tennicollosis (5.5 %), 3) Hydatidosis (2.14 %) and 4) Nodular parasitic lesions without identifying the type of parasite (1 %).

INTRODUCTION

There are many reports on the incidence of Fascioliasis, hydatidosis and tenuicollosis in Iraqi breeds of sheep and goats (1,2,3,4 and 5). These authors recorded only the incidence and identification of the different parasites associated with hepatic lesions in Iraqi goats.

The aim of the present study was to describe the pathology and to report the prevalence of different hepatic parasitic lesions in Iraqi goats.

MATERIALS AND METHODS

Livers (211) infected with different parasitic conditions were collected through the examination of 1400 goats (6-12 months-old) slaughtered in two abattoirs in Baghdad over a period of seven months (Dec.,1992 through July,1993) with one visit per week and an average of 50 goats being examined during each visit.

After complete identification of the various parasites (6) associated with different hepatic lesions, the morphologic features of these hepatic lesions were studied. For histopathological study, small pieces of liver lesions were fixed in 10 % neutral - buffered formalin, processed routinely, cut at 5 µm thickness and stained with hematoxylin and eosin.

RESULTS

Prevalence of the different parasitic hepatic affections in goats was 15.07 %. Four types of liver affections were recognized and these types and their pathological features are :

1) Fascioliasis :

This type of liver disease constituted 6.4 % (90 cases) and was either acute or chronic lesions.

Gross pathology :

In acute cases, liver had hemorrhagic areas with an average size of 1 cm, were dark - red in color, distributed over subcapsular areas, or were seen deep in the liver parenchyma and consisted mainly of necrotic debris, fibrinous exudate (Fig. 1) and free blood. Cut section revealed immature Fasciola gigantica seen in these hemorrhagic areas.

In chronic cases, liver were reduced in size, fibrotic and with uneven and granular surfaces. Gallbladders and

common bile ducts showed marked luminal dilation and thickening of its walls and contained mature (F.gigantica).

Histopathology :

In acute cases, livers showed hemorragic tracks, consisting of free RBCs, fibrinous networks and necrotic hepatocytes. Few neutrophils and mononuclear cells were seen infiltrating these hemorragic tracks (Fig. 2).

In chronic cases, variable amounts of fibrous tissue seen arising from the portal areas or adjacent to it (Fig.3). The fibrotic hepatic tissue was infiltrated with mononuclear cells and eosinophils. Bile ducts and gallbladders showed hyperplastic thickening of its epithelial lining, with good amount of proliferating periductal connective tissue (Fig. 4). There are minor infiltrations of mononuclear cells involving ductal mucosa and periductal connective tissue. Smaller bile ducts showed mild degerative changes with desquamation of its epithelia.

2) Tenuicollosis :

Constituted 5.5 % (77 cases).

Gross pathology :

Cysts were either single or multiple, with an average of 2 cm in diameter, filled with watery clear fluid and attached to the dorsal or ventral surface of the liver (Fig. 5) and did not go deep into the parenchyma. In cases of multiple cysts, the peritoneal tissue and omental fat were also involved. The hepatic tissue at the site of cyst attachment showed occasional focal necrosis and slight hemorrages.

Histopathology :

Hepatic tissue at the site of cyst attachment showed variable degenerative changes and up to coagulative necrosis and was infitrated with mild mononuclear and eosiophilic cells. Hepatic sinusoids at the area of cyst attachment were dilated. Focal hemorrhages are also seen at the area of cyst attachment, whereas, adjacent liver parenchyma was free from any lesion.

3) Hydatidosis :

constituted 2.14 % (30 cases).

Gross pathology :

Cysts were either single or multiple, with an average of 3 cm in diameter, were filled with clear - watery fluid (Fig. 6). Among 30 cases, only 7 fertile cysts were present. These fertile cysts had numerous scolices either attached to the germinal layer or floating free in hydatid fluid. The hydatid cysts were embedded deep into the liver parenchyma, compressing adjacent hepatic tissue. Coexistant hydatidosis and tenuicollosis were seen in 3 cases.

Histopathology :

Cyst wall consisted from an internal germinal layer surrounded by an external cuticular layer (hyalinized) with a concentrically - laminated appearance and surrounded on the outside by a thick fibrous tissue capsule focally infiltrated with mononuclear cells and eosinophils. The hepatic tissue surrounding the cysts showed various degenerative changes and focal hemorrhages with sinusoidal dilation.

4) Parasitic nodules without identifying the type of parasites:

constituted 1 % (14 cases).

Gross pathology :

These were either single or multiple, with the largest diameter was 1 cm, were nodular in nature, greyish - white in color, slightly elevated above the liver surface, had a cavity with a necrotic center and on cutting, gritty sound of calcium deposits was evident.

Histopathology :

These nodular lesions consisted of a central area of caseous necrosis with variable amounts of calcium deposits and were surrounded by an inflammatory zone composed of mononuclear cells, eosinophils and rarely foreign-body type giant cells were present. On the outside, there was fibrous tissue encapsulation. Hepatic tissue surrounding the nodular lesion has mild eosinophilic infiltrations.

DISCUSSION

It is well known that parasitic diseases are important cause of losses among animals in Iraq. The prevalence of fascioliasis in the present study was 6.4 %. This result corresponds to previous reports of fascioliasis in Iraqi goats (1,3), where it has been reported that prevalence of the disease in Iraqi goats ranged 3.3 - 11.5 %. The low prevalence of fascioliasis in goats is probably related to grazing habits of this animal species, indoors breeding and anthelmintic prophylaxis (7). Regarding the encountered pathological changes for carpine fascioliasis, they were consistent with previous reports (8).

The prevalence of tenuicollosis in the present study was 5.5 %. There is no previous report concerning the disease in Iraq goats. Wajdi and Nassir (5) examined 160 goats slaughtered at Al-Dora abbattoir and found them to be free from tenuicollosis and hydatidosis. However, the prevalence of tenuicollosis with Cysticercus tenuicollis in the present study is similar to pathological findings reported before (10,11).

We encountered, a low prevalence (2.14 %) for hydatidosis and this result is not very comparable to that of Al-Abbasy et a. (4) who recorded 5.1 % incidence rate of hydatidosis in Iraqi goats, a result which has been related to the campaign of destruction of stray dogs by Veterinary services (primarily for rabies control), the improved standards of meat inspection in Iraqi abattoirs and the low incidence of hydatid cysts in animals under one year of age related to the length period required for the development of detectable hydatid cysts (4). As far as the pathological changes associated with hydatidosis in the present study, they were similar to what has been described previously (12,13).

Regarding the observed nodular parasitic lesions with a prevalence of 1 %, there is no agreement as far as its aetiology is concerned. Nieberle and Cohrs (10) considered it as a degenerative lesion of larval stages of fascioliasis or due to echnococcosis in these animal species. It is considered accidental lesion.

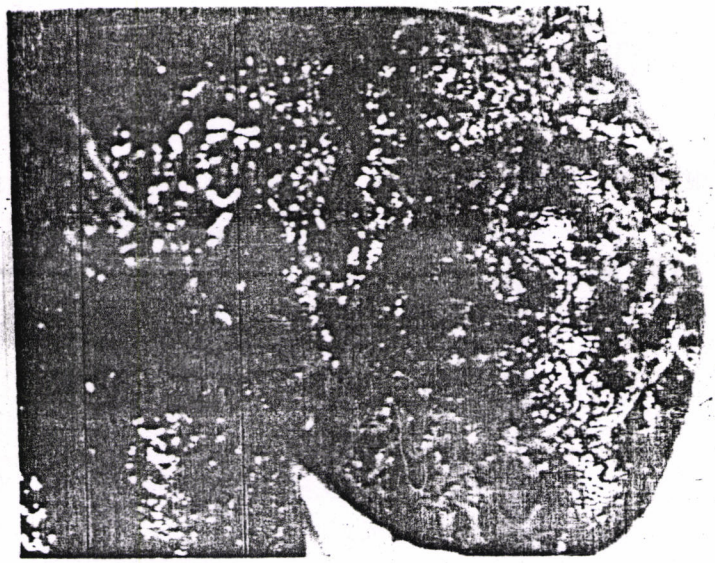

Fig.1: Acute fascioliasis. Note fibrinous membranes

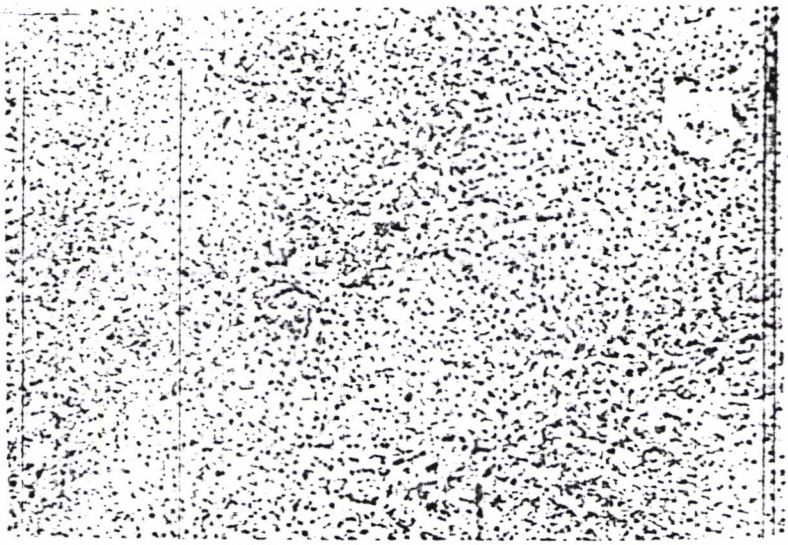

Fig. 2 : Acute fascioliasis. Note hemorrhagic track and multifocal infiltrations of neutrophils and few mononuclear cells involving most of liver tissue (H & E) X 125.

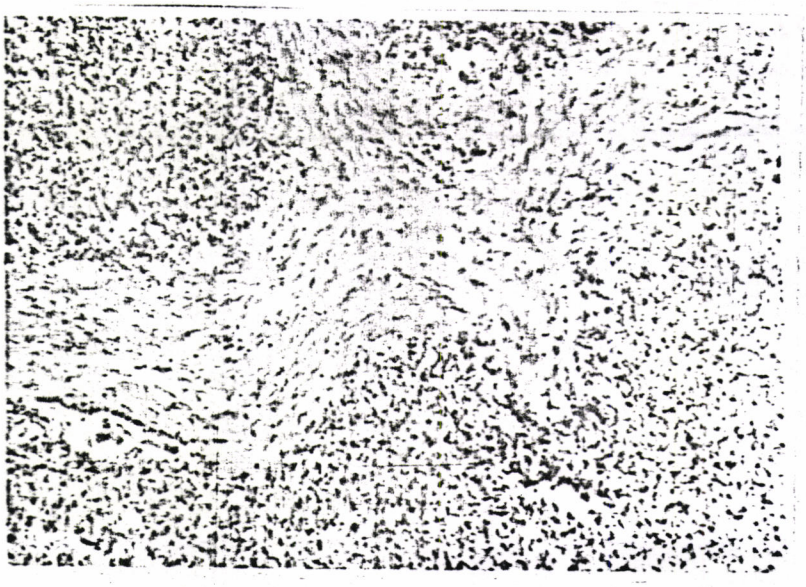

Fig. 3 : Chronic cholangitis. Note chronic inflammatory cellular exudate filling the bile duct and infiltrating the periduct tissue (H & E) X 125.

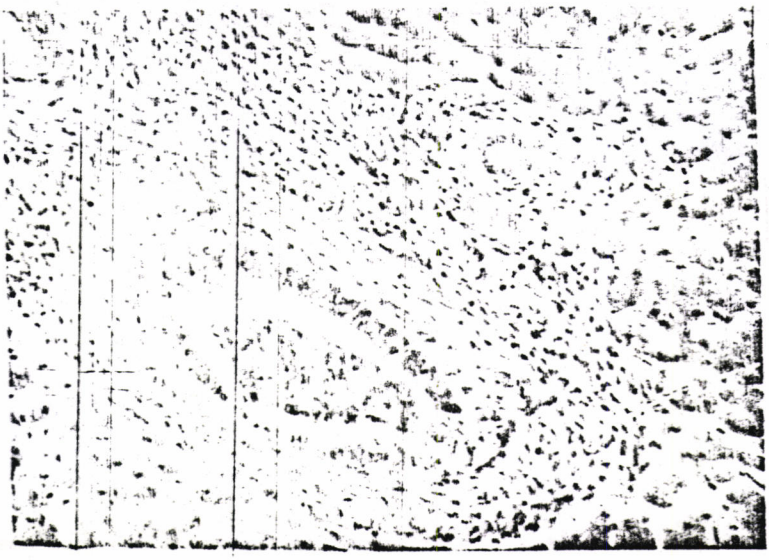

Fig 4. Chronic cholangistis .Not Chronic inflammmatory cellular exudate filling the bile duct and infiltrating the periductal tissue (H&E) x 250.

Fig. 5 : Tenuicollosis. Note multiple cysys (Cysticercus tenuicollis) on the ventral surface of liver.

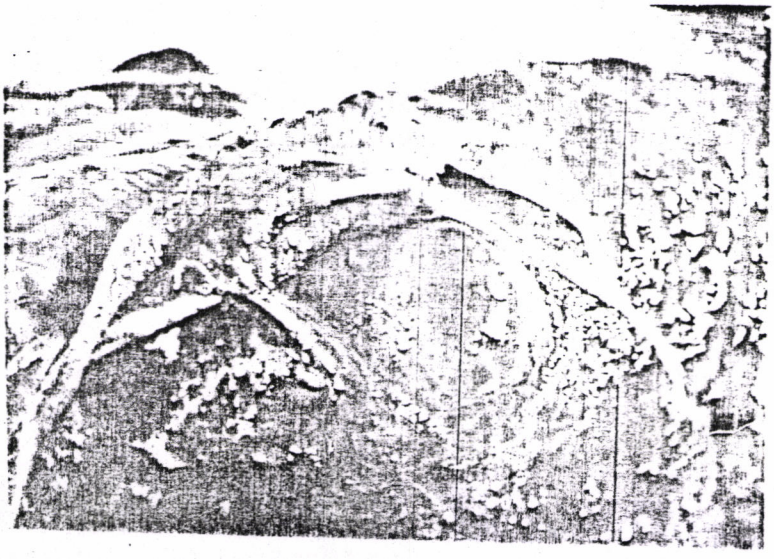

Fig. 6 : Hydatidosis : Note single hydatid cyst on the dorsal surface of liver.

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دراسة التغيرات المرضية للافات الطفيلية في اكباد الماعز

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الخلاصة

صممت هذه الدراسة لتقييم انتشار الافات الطفيلية في اكباد الماعز المذبوحة وتوصيف الافات العيانية والنسيجية لها.

حيث تم فحص 1400 كبد لماعز وقد وجد ان (211) كبد احتوى على افات طفيلية اي بمعدل 15.07٪ .

سجلت اربعة انواع من الاصابة الطفيلية في اكباد الماعز وهي:

1- الاصابة بديدان حلزون الكبد كانت النسبة 6.4٪.

2- الاصابة بـ Tenuicollcsia كانت النسبة 5.5٪.

3- الاصابة بالاكياس العدرية كانت نسبة 2.14٪.

4- افات طفيلية عقيدية في الكبد دون معرفة نوع الطفيلي المسبب لها كانت نسبة 1٪

وقد تم توصيف تلك الاصابات الكبدية عيانيا ومجهريا.