Dept. of Pathology,
Faculty of Vet. Med., Assiut University,
Head of Dept. Prof. Dr. H. Salem.

PATHOLOGICAL STUDIES ON NECROTIC HHEPATITIS IN GOATS

(With 6 Figures)

By

M.K. IBRAHIM and MAHMOUD A.Z.

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دراسات باثولوجية على الالتهاب التنكرزى الكبدى في الماعز

محمد خيرى ، محمود عبدالظاهر

وجدت اصابات في الكبد مشابهة لاصابة المرض الأسود في الأغنام في ٧ من ٢٠ من الماعز النافقة وكانت إهم هذه الاصابات هي الالتهاب التنكرزى الكبدى والتهاب القنوات المرارية المزمنة وكذلك تليف الكبد. وقد وجد ميكروب مشابه لميكروب الكلوستريديا دائما مرتبطة بهذه الاصابات في كبد الماعز وقد استخلص من هذه النتائج أن المرض الاسود ممكن أن يكون سبب في نفوق الماعز في محافظة أسيوط.

SUMMARY

Lesions characteristic to black disease of sheep were observed in 7 out of 20 dead goats. The main pathological changes were obse.ved in the liver and consists of necrotic hepatitis, chronic cholangitis, peri-cholangitis and biliary cirrhosis. Clostridia like organism were constantly associated with the necrotic process. It was concluded that black disease could be the cause of death in goats in Assiut provinces.

INTRODUCTION

Infectious necrotic hepatitis (black disease) is an acute fatal disease of sheep rarely in cattle. It is caused by clostridial novyi type B, (JONES and hunt, 1983). This particular type of clostridial novyi produces three potent exotoxin alpha, beta and Zeta. Black disease is essentially an intoxication produced by these exotoxin and it's development requires a combination of circumstance namely a host that not immune, a latent spore infection of tissue usually the liver and some agency to injure the liver sufficiently to produce anaerobic enviroment in which the spore can germinate and vegetate. This circumstances takes places most commonly in sheep in which an enviroment suitable for germination of the organism is produced by fasciola hepatica (JUBB and KENNEDY, 1985). Death from black disease occur rapidly and usually without warning signs.

There was an increasing number of cases being reported in sheep (WILLIAM, 1962; BAGADI, 1974; ELSEBAIE et al., 1987) on the other hand and according to the available literature, there is no report dealing with the disease in goats.

The aim of the present work is to study the pathological findings of this malady in goat. Moreover the incidence of the disease as well as the pathogenesis will also discussed.

MATERIAL and METHODS

15 dead goat from a herd of 100 native breed were sent to the department of Vet. Pathology Assiut University for postmortem examination. The animals were belonging to military governmental station in Mankabad city. the animals were presented to the dept. within 10 days on three sucessive groups. In addition 5 dead goats belonging to the faculty of Vet. Med. were also sent to the Dept. of Path. for the same purpose. The animals were young 1-2 month. They were evicerated Immediately and examined. Samples of the liver and other organs were fixed in 10% neutral buffer formalin solution. The materials were embeded in paraffin. Sections of 5-7 micron thickness were stained with haematoxylin and eosin, alkaline Methylene blue, crystal vielet, P.A.S and van Giesson stain.

RESULTS

Macroscopical findings :

Gross pathological lesions were in the form of subcutaneous venous congestion which cause dark discoloration of the carcase. Multiple focal areas of necrosis in the liver and petechial hemorrhage in the epicardium and endocardium were present in 7 goats.

Microscopical findings :

Microscopical examination of the liver revealed the presence of multiple areas of focal necrosis in 7 out of 20 goats (Fig. 1). These necrostic areas were always located in the centre of the lobules around the central veins (centrolobular necrosis). They were also located in the vicinity of the portal tract. In the necrotic areas large bacilli arranged singly or in pairs could be clearly identified (Fig. 2). In the vicinity of the necrosed areas prominent leukocytic reactions were constantly seen (Fig. 3). In all cases the liver showed picture of septicemia. these manifested by hydropic and fatty degeneration of the hepatic cells. Oedema and dilation of Disse's space. Activation of the kupfer cells could be frequently observed. There was also damage of endothelium with thrombosis of the blood vesels in some cases. Hemorrhage in some areas was not frequently observed where great number of bacilli were found.

Chronic cholangitis and pericholangitis along with fibrosis of the portal tract (Fig. 4), were a constant finding in all cases examined. Lesions in the epithelium of the bile ducts were usually of altertive and proliferative nature. The epithelium of bile ducts showed numeral hyperplasia. The later was usually followed by desqumation and necrotic changes. As a result of these changes the lumen of the bile ducts was dilated and filled with necrotic epithelium, inflammatory cells and tissue debris (Fig. 5). The wall of the bile duct and its adgacent tissue were fibrosed and showed lymphocytic cell infiltration (Fig. 6). The thickening of C.T of the liver which

was infiltrated with lymphoid as well as macrophage cells was in association with newly formed bile ducts.

DISCUSSION

Out of 20 goats post mortemly examined 7 were found to be affected with necrotic hepatitis. It is well known that, in addition to the internal nares, the oropharynx, intestinal tract and urogenital tract, deep tissue and visceral organs such as liver, lung, spleen and kidneys are colonized with microorganism (JUBB and KENNEDY, 1985; KONEMAN et al., 1971; KONEMAN and DAVIS, 1974; WILSON et al., 1972; JONES and HUNT, 1983). These microorganism may play a part as a source of clinical infection particularly in animal or individuals with reduced resistance or under stress conditions (disease, malnutrition or bad hygenic conditions) (KONEMAN and DAVIS, 1974). In animals the liver of many healthy cattle and sheep harber latent infection with clostridia and fascioliasis may predispese for the occurrence of clinical disease in these animals e.g black disease of sheep. In this study histopathological lesions related to the later disease in goat have been described. The presence of microorganism in the liver undergone binary fission associated with necrosis, leukocytic infiltration,and Kupfer cell reaction indicated that the organism had played a role in inducing these changes.

The suggestion that some member of clostridia remain as latent infection in the reticuloendothelial cells of the liver in cattle, sheep and dogs (JUBB and KENNEDY, 1985) could not emphasized by this work as the bacilli was never seen inside the hepatic or Kupfer cells. Degneerative changes of the hepatocytes, congestion and hemorrhage were probably due to the toxin secreted by the organism (JONES and HUNT, 1983).

The presence of lesions in the bile duct as well as biliary cirrhosis characteristic of fasciola infection in all cases affected will explain the role played by trematode as predisposing for black disease in goat. This result was in harmony with WILLIAMS (1962) and BAGADI and SEWELL (1978). Who stated that black disease in sheep commonly occured due to clostridia novyi which was usually associated with migration of the Immature liver fluke.

In this study a pathological lesions in the liver of goat similar to those of black disease in sheep have been described. Clostridia like organism and lesions of fasciola infection could be incriminating as the causative agents of the disease in goats.

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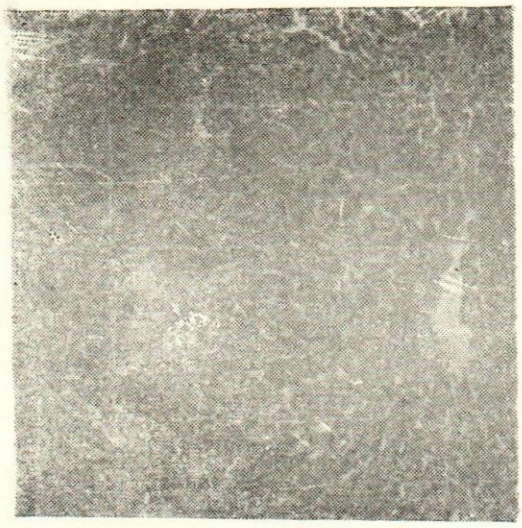

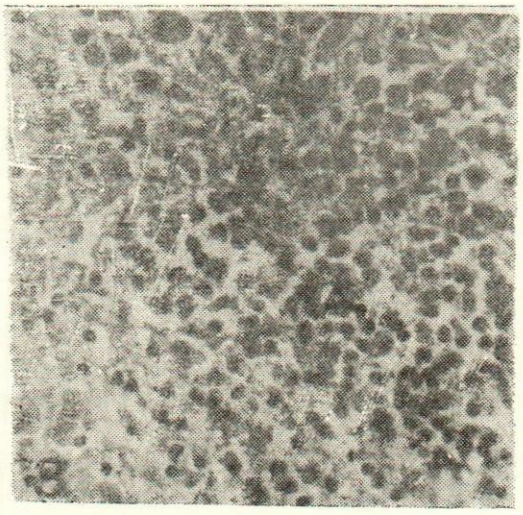

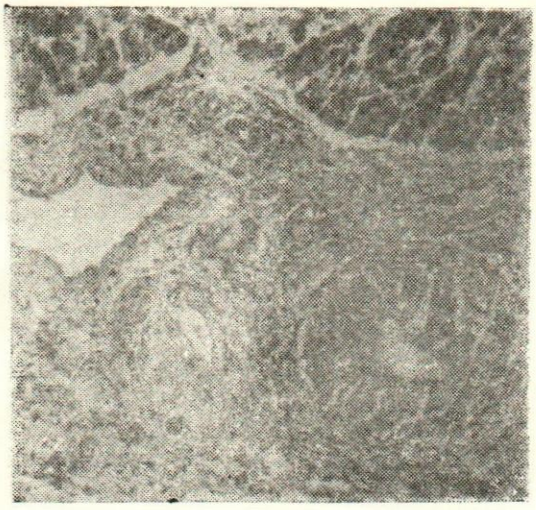

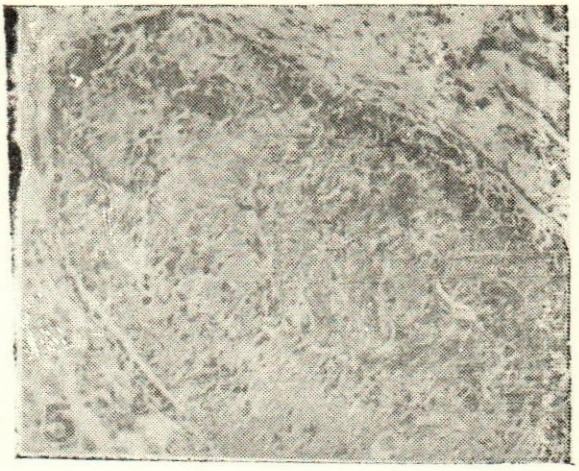

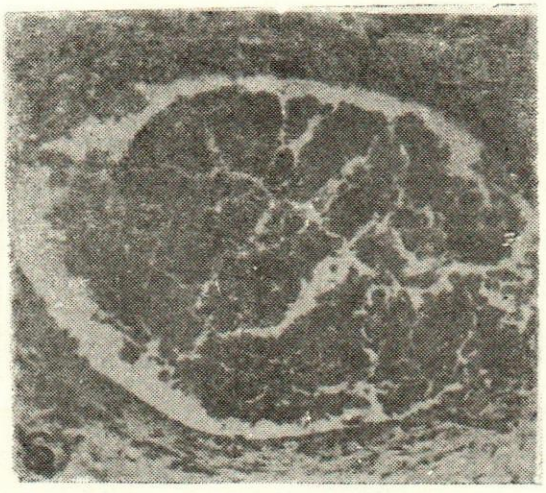

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DESCRIPTION OF FIGURES

Fig. (1): Showing multiple focal areas of necrosis (H & E. 10 x 10 x).

Fig. (2): Showig the organism arranged singly or in pairs. (H & E. 10 x 100).

Fig. (3): Showing the organism with defnite cellular reaction (H & E. 10 x 40 x.).

Fig. (4): Showing fibrosis of the portal tract (H & E. 10 x 16 x).

Fig. (5): Bile duct showing necrosis and desqumation of biliary epithelium (H & E. 10 x 16 x).

Fig. (6): Cholangitis, pericholangitis and desqumation of biliary epithelium (H & E 10 x 16 x).