

LIVER MORPHOLOGICAL CHANGES IN SHEEP INFESTED FROM *LIVER FLUKE*

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Abstract:

Fascioliasis and dicroceliosis are pathologies very often found in animals, and mostly in small ruminants. They can be found in many places around the world. We get reports quite often about their presence on herds, mostly on those of grazing arrangement in Albania. Infestations from *Fasciola hepatica* and *Dicrocoelium dentricum* in sheep cause not only health damage but considerable economical losses because of affection on blegtoral products. This study's goal is the presence of these parasites and the macroscopical and microscopical interpretation of lesions in liver, as well as. We have randomly sampled 224 sheep livers in different Tirana slaughterhouses. The animals were of the different origin. The examination showed that 39 (17.4%) livers were infested with *Dicrocoelium dentricum* and 29.9 % of animals were infested with *Fasciola hepatica*. In 22.2% of samples with presence of these parasites, *Fasciola hepatica* and *Dicrocoelium dentricum* accompany each-other. From macroscopic examination resulted livers with hemorrhage, fibrosis, hyperplasia of bile ducts etc. From microscopic examination, portal inflammation, hyperplasia, fibrosis, presence of parasites and their eggs in the lumen of bile ducts may be distinguished.

Key words: Sheep, *F. hepatica*, *D. dentricum*, slaughterhouse, macroscopic lesions, microscopic lesions.

1. Introduction

Fascioliasis and dicroceliosis are pathologies very often found in ruminants, mostly in sheep. Those are liver pathologies with clinic and financial importance as they cause direct losses due to infested liver confiscation and economic losses by treating with antihelminthic [7, 8, 13, 14]. Slaughterhouses provide an excellent opportunity for detecting diseases of both economic and public health importance [15]. A considerable incidence of them has been discovered in different countries, reported in literature [1, 2, 9, 11, 15]. Routine examinations in slaughterhouses, in Albania, indicate presence of these pathologies. The data obtained from examination of municipality inspectors indicate that liver fluke is more frequently appeared in sheep diseases. An important role on their appearance plays our country's climate conditions, a Mediterranean climate, which impulses the development of parasites's biological cycle. *Fasciola hepatica* and *Dicrocoelium dentricum*, are considered common parasites, being found on liver's bile ducts. These parasites quite often accompany each-other. A wide range of species of land molluscs, which act as first and second intermediate hosts, respectively, intervene in the complex life cycle of *D. dendriticum*, in addition to the domestic and wild mammals which are the definitive hosts. Depending on development

stage of parasite's biological cycle, we may notice different damages in liver, mainly on bile ducts. Fibrosis and hyperplasia of them may be noticed on some cases, [3, 6, 12] and on many occasions, broaden bile ducts with different sizes of white stripes on the surface were seen [5, 6].

2. Material and Methods

2.1 The study area and animals and sample collection:

The study was carried out in different slaughterhouses in Tirana. A total of 224 sheep livers were controled on the period June-November 2010. Animals were randomly chosen in slaughterhouses; the animals were of different age and origin. The liver and the other organs have been examined. Liver lesions were grossly diagnosed based on pathological changes of organ colour, size, morphology, consistence, presence of lesions and parasites. For every liver examined macroscopically, a sample was taken and was put in formaline 10%. Microscopic samples were prepared in pathologic anatomy laboratory in Faculty of Veterinary Medicine, Thesaloniki and were stained with hematoxiline and eosine.

2.2 Data analysis:

The data gathered were analysed with statistic software Splus 8 with the help of categorical data analysis capability of this software.

3. Results and Discussion

The sheep examination in slaughterhouses was randomly and animals had different age and origin. The samples were taken from sheep and lambs. In slaughterhouses were examined 17 lamb samples (7.6%) and 207 sheep samples (92.4%).

Number of samples with pathologic processes, divided in accordance with age, is shown on figure 1.

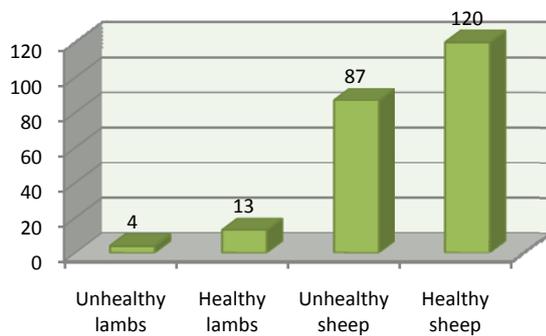


Figure 1. Classification of lambs and sheep based on health conditions

Based on the data displayed, from 17 lamb samples, 4 of them (23.5%) had pathologic processes. Macroscopic examination shown that in 2 livers' lambs were presented *Dicrocoelium dentricum* parasite. Presence of *D. dentricum* parasites on these cases is light and as a consequence do not present a big difference on bile ducts. On the parenchyma are distincted areas on lines shape with red color that indicate parasites passage [3, 5]. Around bile ducts is seen a light fibrosis [3,6].

Sheep category: from 207 samples examined, resulted that 87 samples (42%) had macroscopic lesions; in 120 samples (58%) were not seen macroscopic changes. In 87 samples were found out different macroscopic lesions.

In 37 sheep liver samples were presented *Dicrocoelium dentricum*. *Fasciola hepatica* was found out in 29.9% liver samples (26 animals). Presence of *D. dentricum* and *F. hepatica* parasites on some cases is light. Sometimes is seen a light fibrosis on the parenchyma and around bile ducts while on some other cases a massive growing fibrosis is seen around bile ducts [3, 6, 12].



Figure 2. Liver where are observed *Dicrocoelium dentricum* parasites in the lumen of bile ducts and a light presence of fibrosis.



Figure 3. Infested liver by *Dicrocoelium dentricum* and presence of fibrosis around bile ducts.



Figure 4. Infested livers by *Fasciola hepatica*.



Figure 5. Infested liver by *F. hepatica*. There is observed enlargement of bile ducts.

Widening of bile ducts is an element that it is often seen and very expressed [12]. There are livers which have only one broaden bile duct and there are some others which have a few. Enlargement of bile ducts are various.

On incision surface are seen *F. hepatica* parasites of different phases, some of them are immature and some others are matured [3].

There is observed enlargement of bile ducts, this enlargement is bigger on figure 5 and smaller on figure 4.

On microscopic studies, we found out changes on liver tissue and on bile ducts. Hepatocytes necrosis was observed and hemorrhage and infiltration with inflammation cells, as well as (Figure 6). Hyperplasia and fibrosis were found out on bile ducts infested by *Fasciola hepatica* and *Dicrocoelium dentricum* parasites. There were presented portal inflammation and massive fibrosis (figure 7).

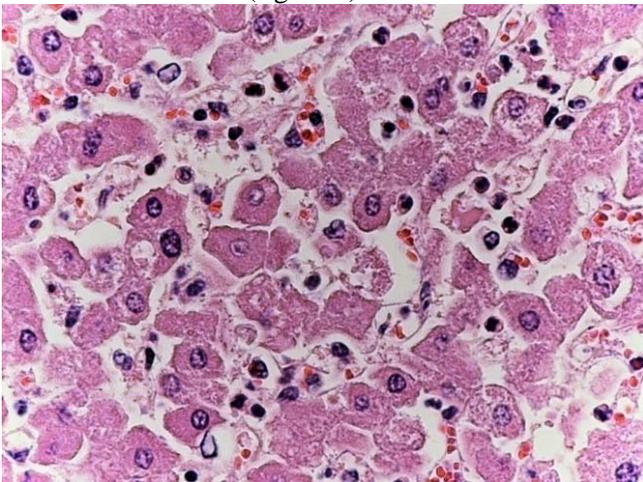


Figure 6. Hemorrhage, necrosed hepatocytes, edema and inflammation cells.

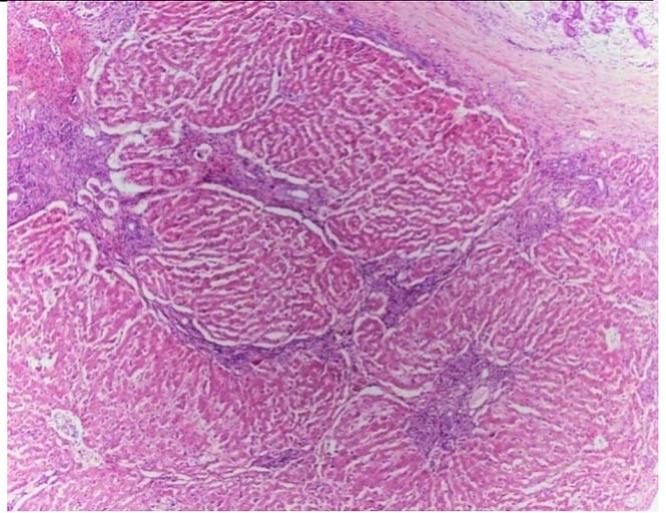


Figure 7. Portal inflammation in liver and accumulation of fibrosis.

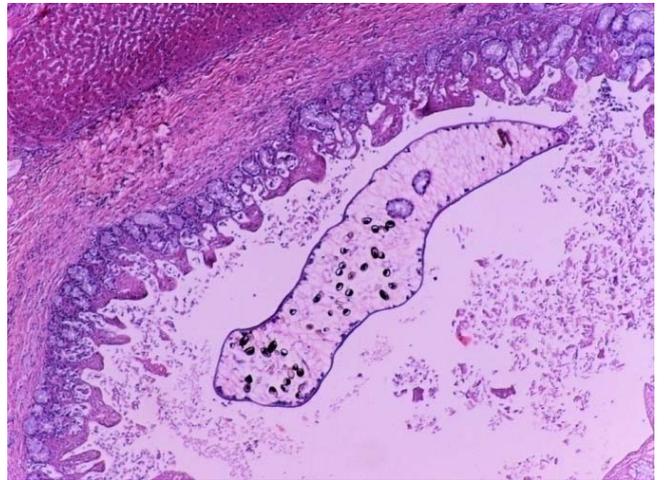


Figure 8. Presence of *Dicrocoelium dentricum* in the lumen of bile ducts.

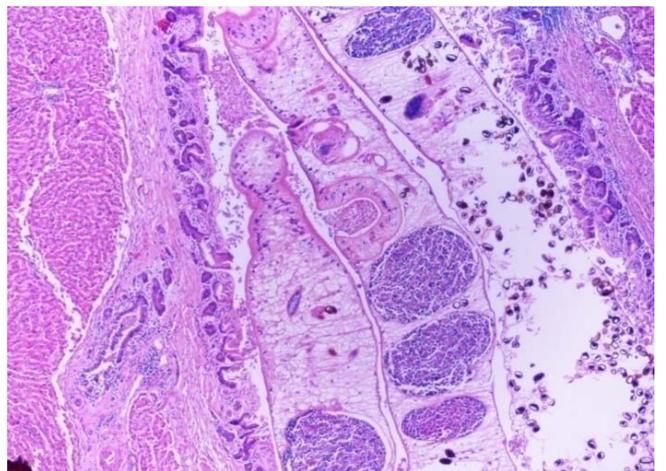


Figure 9. Presence of *Fasciola hepatica* in the lumen of bile ducts.

As we can see in figures 8 and 9 histological findings shown the presence of liver fluke into bile ducts.

4. Conclusions

This study indicated that the infestation scale of sheep liver in slaughterhouses is high. Macroscopical findings most frequent are light or massive fibrosis around bile ducts, widening of bile ducts, hemorrhage and the presence of liver fluke in the lumen of bile ducts supported by microscopical findings. These pathologies accompany by economical losses for farmers.

5. References:

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