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Pathological investigations of liver affections in small ruminants suspected with gastrointestinal tract disorders

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Abstract

The current investigation was conducted for pathological studies of liver affections in small ruminants carcasses (12 sheep and 5 goats) affected with gastrointestinal tract disorders brought to Department of Veterinary Pathology, LUVAS, Hisar during the period of August, 2019 to January, 2020 for the purposes of post-mortem examination. The investigation included the detailed post-mortem examination, gross pathology and histopathology of the liver in small ruminants affected with gastrointestinal tract disorders. Gross pathological studies revealed total 70.59% lesions, majority of which were necrotic changes followed by, hepatomegaly associated with vascular changes, induration along with distended gall bladder and hydatid cysts. The histopathology of liver revealed the microscopic lesions in 94.12% cases in which maximum cases were of degenerative changes followed by focal hepatitis, necrotic hepatitis, circulatory changes (congestion and haemorrhages) and cirrhosis.

Keywords: Gastrointestinal tract disorders, liver affections, sheep, goat, and hepatitis

Introduction

The liver is considered one of the most important vital organs for animal health, production and reproduction because many metabolic activities of the body occurred in the liver. The liver may also susceptible to various affections and so any disturbances in the liver affects the total health status of the animal. Liver lesions indicate the presence of disease in other organs and systems especially the gastrointestinal tract disorders. According to Purushothaman and Rajan (1985) [6], the liver affections adversely affect the health and growth of the animals results in heavy economic losses. Liver possesses a variety of functions which are related to the metabolic pathways (Sastri and Ramarao, 2001) [8]. The present investigation was carried out on the liver of the small ruminants which are suspected with gastrointestinal tract disorders.

Materials and Methods

The current study was performed to investigate the liver affections of small ruminants affected with gastrointestinal tract disorders, brought to the Department of Veterinary Pathology, LUVAS, Hisar for post-mortem examination. During post-mortem, all gross lesions were noted carefully and the samples were collected for histopathology in 10% neutral buffered formalin. The fixed tissues were washed in running tap water, dehydrated in graded ethyl alcohol, cleared in benzene and embedded in paraffin wax (melting point 60-62°C). Paraffin sections were cut at the thickness of 4-5µm and stained with routine haematoxylin and eosin (H&E) stain (Luna, 1968) [2].

Results and Discussion

The main gross lesions of liver in small ruminants were depicted in Table 1. Grossly the lesions were found in 70.59% cases and main lesions were necrotic changes (35.29%), followed by, hepatomegaly associated with vascular changes (17.65%), induration along with distended gall bladder (11.76%), and hydatid cysts (5.88%). More or less similar finding in sheep were shared previously by Mundotiya (2017) [4].

Induration and hepatomegaly in small and large ruminants were also reported earlier. Lehereena *et al.* (2010) [7] reported the vascular changes and necrotic changes in ruminants. Seema *et al.* (2007) [5], reported the findings of hepatomegaly, vascular changes, necrotic changes and induration in ruminants. The main histopathological lesions of liver in small ruminants were depicted in Table 2 which revealed that the lesions of liver affections were found in 94.12% cases in which maximum cases were of degenerative changes (35.29%), followed by focal hepatitis (29.41%), necrotic hepatitis (17.65%), circulatory changes

including congestion and haemorrhages (5.88%), and cirrhosis (5.88%). More or less similar results like circulatory disturbances, and necrotic hepatitis were reported by the Marodia (2017) [3] and Londhe (2010) [1]. Lehereena *et al.* (2010) [7] also reported the cirrhosis in ruminants. Vascular or circulatory changes were characterized by distension of central vein and hepatic sinusoids. Focal hepatitis was characterized by presence of focal areas of congestion and haemorrhages along with infiltration of lymphocytes and neutrophils.

Table 1: Gross lesions observed in liver of small ruminants affected with gastrointestinal tract disorders (n=17).

S.N.	lesions	Sheep	Goat	Total	%age
1	Hepatomegaly associated with vascular changes	2	1	3	17.65
2	Necrotic changes	4	2	6	35.29
3	Induration with distended gall bladder	2	0	2	11.76
4	Hydatid cysts	1	0	1	5.88
	Total	9	3	12	70.59

Table 2: Histopathological lesions observed in liver of small ruminants affected with gastrointestinal tract disorders (n=17).

S.N.	lesions	Sheep	Goat	Total	%age
1	Circulatory changes (congestion & haemorrhages)	1	0	1	5.88
2	Degenerative changes	4	2	6	35.29
3	Focal hepatitis	2	3	5	29.41
4	Necrotic hepatitis	3	0	3	5.88
5	Cirrhosis	1	0	1	5.88
	Total	9	3	12	70.59

Conclusion

On the basis of the results of the current study, it may be concluded that most of the Gross lesion in liver were vascular changes and inflammatory changes. Histopathology of liver revealed most of the lesions as degenerative changes, focal/necrotic hepatitis, vascular changes, and cirrhosis.

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