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Miscellaneous condition in liver of sheep in southern region of Rajasthan

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Abstract

The study was carried out from January 2017 to December 2017 in Udaipur, Dungarpur and Chittorgarh districts of Southern Rajasthan. Total number of 1275 sheep liver samples, irrespective of sex, age, and breeds were examined. Out of these representative samples, 347 liver samples showed gross lesions, were subjected to histopathological examinations. Out of 347 samples 5 samples showed pathological lesions of liver Miscellaneous Condition was observed i.e. Telangiectasis 1 (0.289 per cent), Bile duct Hyperplasia 3 (0.864 per cent), Fibrosarcoma 1 (0.289 per cent).

Keywords: Sheep, liver, telangiectasis, bile duct hyperplasia, fibrosarcoma

Introduction

Sheep is a important livestock species of India. They contribute greatly to the agrarian economy, especially in the arid/semi-arid and mountainous areas where crop and /or dairy farming are not economical. They play an important role in the livelihood of a large percentage of small and marginal farmers and landless labourers engaged in sheep rearing. A number of rural-based industries use wool and sheep skins as raw material. Sheep manure is an important source of soil fertility, especially in southern state.

Sheep in India are mostly maintained on natural vegetation on common grazing lands, wastelands and uncultivated (fallow) lands, stubbles of cultivated crops and top feeds (tree loppings). Rarely are they kept on grain, cultivated fodder or crop residue.

In India, sheep has special and important function in religious occasions amongst the followers of Islam and others. In this context, the live animal has an intrinsic value that exceeding its value as meat producer. It is also used as experimental animals.

In the tropics sub-tropics meat production is the most important function of sheep. It has high average carcass weight and this account for the higher production of mutton. Mutton is the preferable meat in India, thus highly number of sheep are slaughtered daily in the India.

India ranks 3rd in sheep population and majority of Indian sheep breeds are medium satire. The sheep population in the country is 65.06 million (12.71 per cent) of total livestock population in India, contributing 529.08 million kg meat and 48.13 million kg wool production, (Indian livestock census 2012) [1].

Sheep are mostly reared for wool and meat. Sheep skins and manure constitute important sources of earning, the latter particularly in southern India. Milk from sheep is of limited importance and that too in very limited areas of Jammu and Kashmir, Rajasthan and Gujarat. Indian sheep are not regarded as dairy sheep.

Material and Method

For the present study a total of 1275 samples of the liver were collected from sheep of either sex, irrespective of age and breeds. Out of these, 347 samples of liver of sheep showing gross lesions were used for further study. The tissue specimens for proposed investigation were collected from carcasses of sheep subjected to post-mortem examinations to various veterinary clinics and slaughter houses of Udaipur, Dungarpur and Chittorgarh districts of southern Rajasthan. All the samples examined grossly for alterations in morphology in terms of shape, size, colour, consistency, odour, location and type of the lesion in individual part of liver, as far as possible the colour of tissue was noted immediately after collection and prior to fixation. The samples were collected in all the seasons during the period of study from January, 2017 to December 2017.

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Following collection, all the samples were properly preserved in 10 per cent formal saline after cutting in to individual parts. The parts tissues measured 5-10 mm. in thickness, presenting the lesions along with normal tissue were used for fixation and pathological examinations. For histopathological examinations, processing of tissue was carried out by paraffin embedding using acetone and benzene technique (Lillie, 1965) [19]. The tissue section of 4-6 micron were cut and stained with haematoxylin and eosin staining method. (Luna *et al.* 1968) [20].

Table 1: Occurrence of miscellaneous condition in liver of sheep in southern region of Rajasthan

S. No.	Miscellaneous Condition	Name of districts						Total no. of sample	Percentage %
		Udaipur (N=443)		Dungarpur (N=411)		Chittorgarh (N=421)			
		No. of Conditions	%	No. of conditions	%	No. of conditions	%		
1.	Telangiectasis	0	0	1	0.85	0	0	1	0.29
2.	Bileduct hyperplasia	2	1.51	0	0	1	1.03	3	0.86
3.	Fibrosarcoma	1	0.76	0	0	0	0	1	0.29

1. Telangiectasis

The overall occurrence of this condition was observed in 1 cases (0.29 per cent).

Grossly, the effected part liver appeared as dark red area, irregular in shape but well circumscribed and ranging from pinpoint to many centimeter in size.

Microscopically, irregular and cystic dilation of hepatic sinusoids in all over the liver observed, these cystic cavities were full of red blood cells and in some cases fibrins with neutrophil in these cavities were seen (fig. 1). It is in conformity with the findings of Yousef *et al.* (2011) [6].

Etiology for telangiectasis may be lake of blood pressure, blood filled cavities in the pranchyma of liver and sinusoidal dialation.

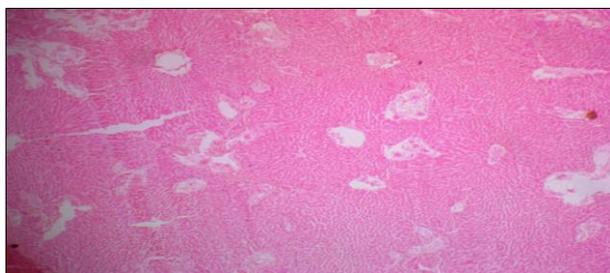


Fig 1: Microphotograph of liver showing telangiectasis in periportal areas, blood vessels and sinusoidal space is widely dialated. H&E-4x

2. Bile duct hyperplasia

The overall occurrence of this condition was observed in 3 cases (0.86per cent).A higher occurrence 19.70 per cent was recorded by Khan *et al.* (2015) [2].

Grossly, effected livers were enlarged. Light and dark patches were clearly visible on the surface of the liver. In the cut section, the swollen and the fibrotic bile ducts were prominent.

Microscopically, severe destruction in the liver tissue including inflammation, atrophy, necrosis, fibrosis and hyperplasia of the bile ducts. Infiltration of the inflammatory cells including macrophages and plasma cells was observed in section. The infiltration of these cells were severe in the area of portal triads. Bile ducts manifested hyperplastic changes in the epithelium. The bile ducts were of different size and shape with the dilated lumen, which showed the increased number of epithelial cells or hyperplasia. Severe fibrosis occurred in bile duct. Bile duct also possessed dilated lumen and was

Results and Discussion

The overall occurrence of this condition was observed in 1 case (0.29 per cent) and individually occurrence of this condition was observed in Udaipur, Dungarpur and Chittorgarh 0%, 0.85% and 0% respectively (Table 1). As we have seen a wide range of difference between the incidence reported at India and other parts of world that may be possibly due to seasonal variation, nutritional status, stress factors, management practices, geographical and climatic differences.

found surrounded by fibrinous exudate. Hepatocytes were found compressed, atrophied and dislodged from their normal position. Empty spaces in the area were due to compression and atrophy of the cells. Disintegration of the bile ducts was observed. The nuclei of the epithelial cells of the bile duct was found grouped into masses. (Fig. 2 & 3)

Etiology for Bile duct hyperplasia may be toxins, chemical substances, toxin plants, infection of various pathogens.

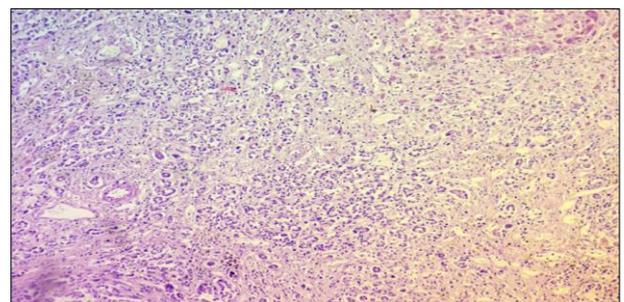


Fig 2: Microphotograph of liver showing bile duct hyperplasia, severe destruction in the liver tissue including atrophy, necrosis, fibrosis and proliferation of numerous small to large size the bile ducts. H&E- 10x

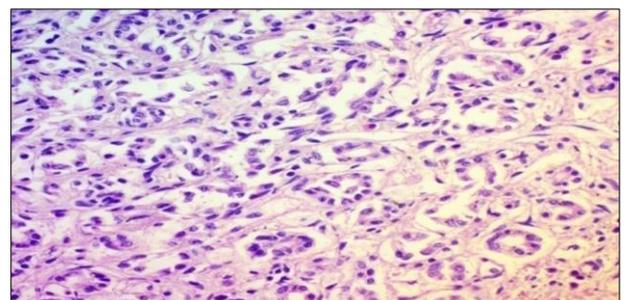


Fig 3: Microphotograph of liver showing bile duct hyperplasia, severe destruction in the liver tissue including atrophy, necrosis, fibrosis and proliferation of numerous small to large size the bile ducts. H&E- 40x

3. Fibrosarcoma

The overall occurrence of this condition was observed in 1 cases (0.29 per cent). A similar occurrence was 0.41% recorded by Kilinc and Saglam (2016) [3].

Grossly, the liver was mottled surface. Microscopically, well circumscribed mass adult fibrosarcomas are almost always

deep seated. There was areas of necrosis or haemorrhage. Proliferation of fibrous tissue and blood vessels in parenchyma, causing severe destruction. Monomorphic population of spindle cells arranged in fascicles and intersect at acute angles resulting in herringbone appearance. Mitoses were common seen in hepatic nucleus (Fig. 4 & 5). It is in conformity with the findings of Kilinc and Saglam (2016)^[3]. Etiology for fibrosarcoma may be radiation, chemical injuries, thermal injuries, some time genetically.

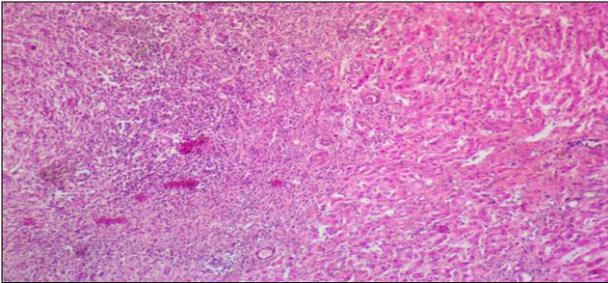


Fig 4: Microphotograph of liver showing Fibrosarcoma, proliferation of fibrous tissue and blood vessels in perenchyma, causing severe destruction. H&E-10X

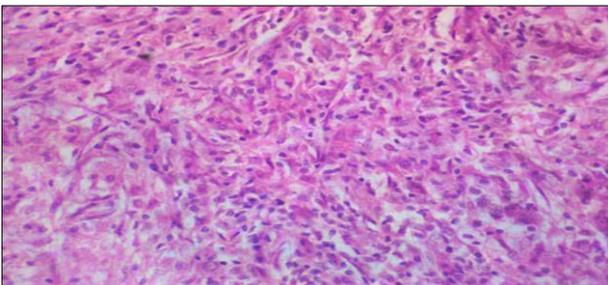


Fig 5: Microphotograph of liver showing Fibrosarcoma, proliferation of fibrous tissue and blood vessels in perenchyma, causing severe destruction. H&E-40x

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