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Pradeep Makawana
M.V.Sc, Department of
Veterinary Pathology, CVAS
Bikaner, Rajasthan, India

Jayesh Vyas
M.V.Sc, Department Of Animal
Breeding and Genetics, CVAS
Bikaner, Rajasthan, India

Shobha Burdak
M.V.Sc, Department of
Veterinary Pathology, CVAS
Bikaner, Rajasthan, India

Priyanka
M.V.Sc, Department Of
Veterinary Anatomy, CVAS
Bikaner, Rajasthan, India

Ravta Ram
SRF, Krishi Vigyan Kendra
Gudamalani, Barmer (AU),
Jodhpur, Rajasthan, India

Babita Kumari
Assistant Professor, IIVER,
Rohtak, Haryana, India

Rahul Kumar
M.V.Sc, Department of
Veterinary Medicine, Nanaji
Deshmukh Veterinary Science
University, Jabalpur, Madhya
Pradesh, India

Corresponding Author
Pradeep Makawana
M.V.Sc, Department of
Veterinary Pathology, CVAS
Bikaner, Rajasthan, India

Calcification in liver of sheep

Pradeep Makawana, Jayesh Vyas, Shobha Burdak, Priyanka, Ravta Ram, Babita Kumari and Rahul Kumar

Abstract

During present investigation total 1038 liver samples were examined grossly and hepatic lesions were found in 241 liver samples, out of these, calcification was present in 8 cases with 3.82 per cent occurrence rate. Grossly, white or grayish masses was found on liver parenchyma. Gritty sound was heard on cutting of tissue. Microscopically, caseative necrosed area centrally deposited with calcium salt (granules or spheres) were showing deep blue stain with haematoxylin and surrounded by thick fibrous capsules. When tissue section stained with von kossa, the calcified area showing black in colour. Some section of liver showed necrosed and calcified area surrounded by fibrous connective tissue and fatty changes were also observed.

Keywords: Calcification, liver, sheep

Introduction

Sheep farming plays an important role in the national economy with the unique feature of providing low expenditure and maximum profit. Sheep have a specific talent to adapt adverse climatic conditions among all the domestic species. Sheep, with its multi-facet utility for wool, meat, milk, hide and manure forms an important component of the rural economy particularly in the arid, semi-arid and hilly areas of the country. Sheep milk is highly nutritious contain more vitamin A, vitamin B and vitamin E, Phosphorus, Calcium, Potassium and Magnesium than cow's milk. It contains a high amount of short and medium-chain fatty acids. Sheep milk contains more Conjugated Linoleic Acid (CLA) than the milk of other animals which is cancer-fighting and fat-reducing fat (Wodeyar and Kadam, 2017) [7].

The liver has enormous task of maintaining the body's metabolic homeostasis. This task includes the processing of dietary amino acids, carbohydrates, lipids, vitamins, synthesis of serum proteins, detoxification and excretion into bile of endogenous waste products and xenobiotics also. Thus, it is not surprising that the liver is vulnerable to a wide variety of metabolic, toxic, microbial and circulatory insults. The disease process is primary to the liver, in some instances while in other instances such as extrahepatic infections, the hepatic involvement is secondary (Kumar *et al.*, 2007) [3].

Materials and Methods

1. Source and collection of samples

For the present investigation, samples of the liver of sheep (*Ovis aries*) irrespective of age, sex and breed were collected from slaughter houses of in and around Bikaner district. The tissue specimens were also collected from the carcasses of sheep submitted to the department of Veterinary Pathology, College of Veterinary and Animal Science, Bikaner for post mortem examination. During post-mortem examination, the samples were thoroughly examined grossly for alteration in morphology in terms of shape, size, colour, consistency, location and presence of cysts, tumours and abscesses etc. lesions in individual parts of liver.

2. Processing of tissue samples

Following collection, all the liver samples were properly preserved in 10 per cent formalin after cutting the affected parts with healthy parts of liver. The parts of affected liver measured 2-5 mm thickness and presenting the lesions with normal tissue were used for fixation and further histopathological examination. For histopathological examination, processing of tissues was done by paraffin embedding using acetone and benzene technique (Lillie RD, 1965) [4]. The tissue sections of 4-6 micron thickness were cut and stained with routine staining method of hematoxylin and eosin staining.

3. Staining of tissue sections

The tissue sections of liver were stained using haematoxylin and eosin method for histopathological evaluation (Luna G 1960) [5] (Bancroft JD, Suvama, SK, Layton C. Bancroft's 2013). Following deparaffinization, the sections were dehydrated using serial changes in ethanol and stained using Harris haematoxylin. After differentiation and follow up staining with Eosin, the slides were dehydrated and then permanently mounted using DPX. As far as possible, results were recorded by gross observations and microscopic examination.

Von Kossa's stain

The sectioned tissue were deparaffinized and hydrated to distilled water. They were stained in silver nitrate solution for 60 minutes and exposed to direct sunlight. They were rinsed in distilled water. Sectioned tissues were stained in sodium thiosulfate solution for 2 minutes. Tissues were rinsed well in distilled water. They were stained in counterstain as nuclear fast red solution for 5 minutes. Then dehydrated in alcohol and cleared in xylene, two change. Finally, sectioned were mounted in DPX and covered by coverslip. As far as possible, results were recorded by gross observations and microscopic examination.

Result and Discussion

In present investigation the overall occurrence of calcification was observed in 3.32% cases. Lower occurrence of calcification was recorded by Sanjeeth (2010) [6] as 0.43%. Whereas higher occurrence was recorded by Jibat *et al.* (2008) [2] as 5.2% and Bulbula and Bedada (2019) [1] as 9.04%. Grossly, white or grayish masses was found on liver parenchyma. Gritty sound was heard on cutting of tissue. Microscopically, caseative necrosed area centrally deposited with calcium salt (granules or spheres) were showing deep blue stain with haematoxylin and surrounded by thick fibrous capsules. When tissue section stained with von kossa, the calcified area showing black in colour. Some section of liver showed necrosed and calcified area surrounded by fibrous connective tissue and fatty changes were also observed. The observations reported are similar to those mentioned by Sanjeeth (2010) [6].



Fig 1: Gross Photograph of liver showing calcification.

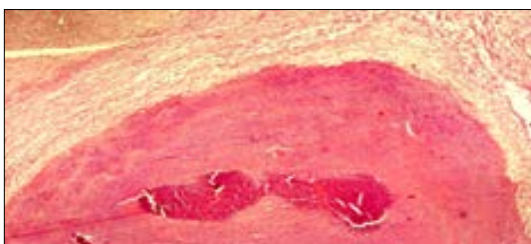


Fig 2: Liver showing centrally calcified, necrosed area surrounded by fibrous connective tissue. (H&E, 40x)



Fig 3: Photomicrograph of liver showing deposition of calcium salt. (Von kossa, 40x)

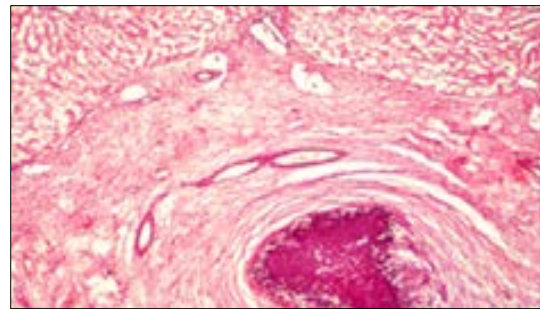


Fig 4: Photomicrograph of liver showing centrally deposition of calcium salt, necrosis area surround by fibrous capsule and fatty changes in hepatic parenchyma. (H&E, 100x)

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