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Occurrence and pathology of hepatic abscess in liver of sheep

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Abstract
During present investigation total 1038 liver samples were examined grossly and hepatic Lesions were found in 241 liver samples, out of these, hepatic abscess was present in 122 cases with 50.62 per sent occurrence. Grossly, hepatic abscesses were seen as a single to multiple in numbers that were raised on hepatic parenchyma with focal whitish-yellow in colour. Creamy white inspissated granules pus surrounded by a thick coat of fibrous tissue that was showed at the time of cutting. Some section of the liver showed military abscess. Microscopically, the section revealed that the case necrotic area was surrounded by a dense layer of fibrotic connective tissue and calcification were also observed. Hepatic abscess showing central necropsied area with infiltration of polymorph nuclear cells and few lymphocytes encapsulated by fibrous connective tissue. Hepatic parenchyma revealed that extensive areas of destruction due to the presence of numerous micro abscess. Micro abscesses showing heavy infiltration of neutrophils in and around the affected area. In some cases of micro abscess showed necrotic areas were surrounded by inflammatory cells (neutrophils, lymphocytes and giant cells).

Keywords: Pathology, occurrence, conjugated linoleic acid (CLA), sheep farming

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) [19].

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 xenobiotic 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 extra hepatic infections, the hepatic involvement is secondary (Kumar *et al.*, 2007) [6].

Hepatic abscess (HA) can be defined as an encapsulated collection of suppurated material within the liver parenchyma (Mavilia *et. al*., 2016) [11].

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). 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 hematoxylin and eosin method for histopathological evaluation (Luna G 1960) [8], (Bancroft JD, Suvarna, SK, Layton C. Bancroft's 2013) [2]. Following deparaffinization, the sections were dehydrated using serial changes in ethanol and stained using Harris hematoxylin. 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.

Result and Discussion

In present investigation the overall occurrence of this condition was observed in 50.62% cases. Patra (2002) [13] observed almost similar occurrence of hepatic abscess was 40.74%. Higher occurrences of hepatic abscess was recorded by El-Sayed *et al*. (1991) [3] as 80%. Whereas lower occurrences of hepatic abscess were recorded by Sarkar (1998) [15] as 10.2%, Shankarbhai (2007) as 16.22%, Abed (2012) as 22.36%, Mashhadi *et al*. (2006) as 8.7%, Tehrani *et al*. (2012) as 4.6%, Madhav *et al*. (2015) as 0.224%, Kilinc and Saglam (2016) as 10%, Mundotiya (2018) as 4.61% and Kiran *et al.* (2020) as 0.95%.

Grossly, hepatic abscesses were seen as a single to multiple in numbers that were raised on hepatic parenchyma with focal whitish-yellow in colour. Creamy white inspissated granules pus surrounded by a thick coat of fibrous tissue that was shown at the time of cutting. Some section of the liver showed military abscess.

Microscopically, the section revealed that the caseo-necrotic area was surrounded by a dense layer of fibrotic connective tissue and calcification were also observed. Hepatic abscess showing central necropsied area with infiltration of polymorph nuclear cells and few lymphocytes encapsulated by fibrous connective tissue. Hepatic parenchyma revealed that extensive areas of destruction due to the presence of numerous micro abscess. Micro abscesses showing heavy infiltration of neutrophils in and around the affected area. In some cases of micro abscess showed necrotic areas were surrounded by inflammatory cells (neutrophils, lymphocytes and giant cells). These observations reported similar to those mentioned by Santa Rosa *et al.* (1989), Patra (2002) [13], Shankarbhai (2007) [16], Sanjeeth (2010) [14], Madhav *et al.* (2015) [9], Sonawane *et al.* (2016) [17], Mundotiya (2018) [12] and Kiran *et al.* (2020) [5].

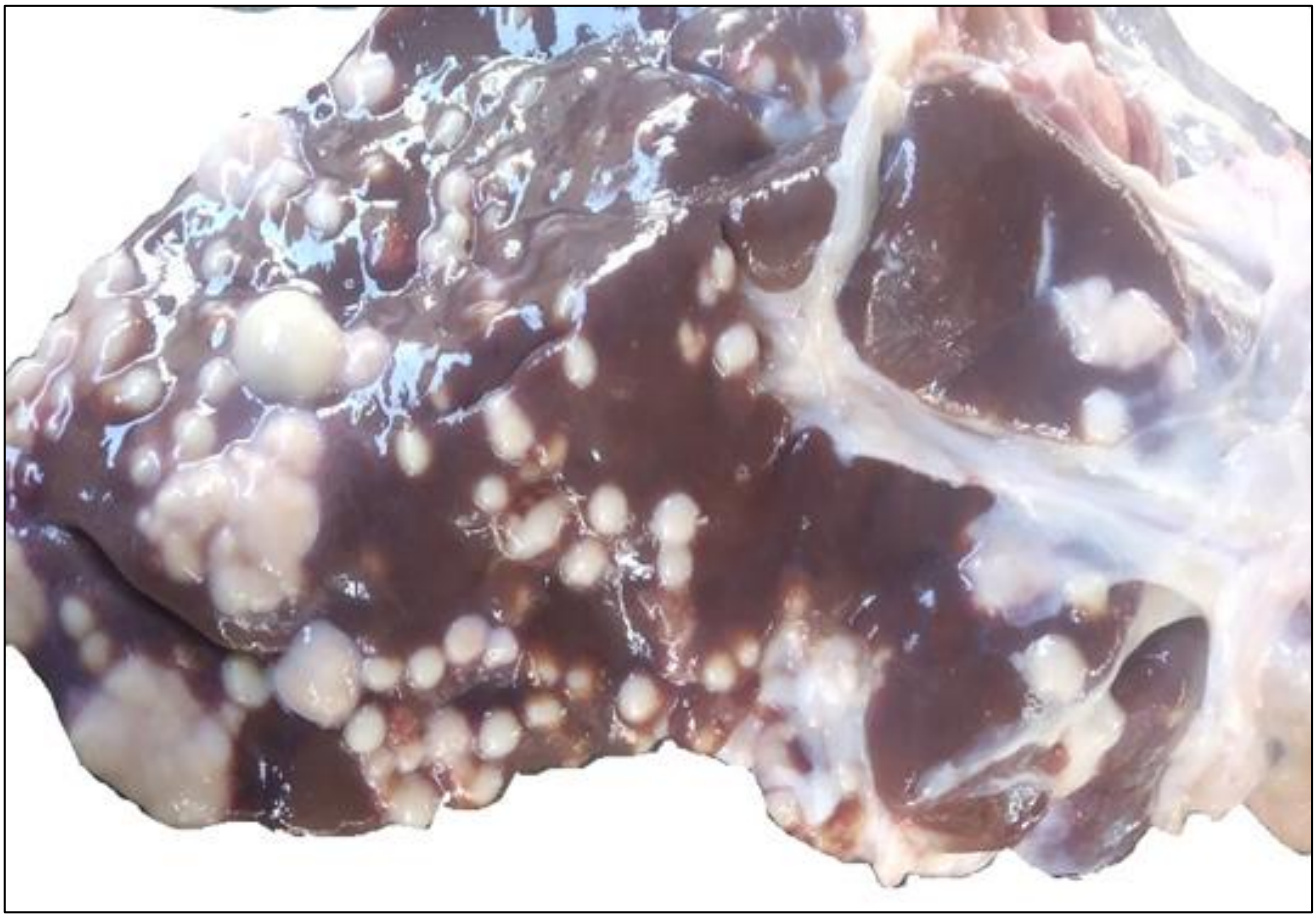

Fig 1: Gross photograph of liver showing multifocal abscess

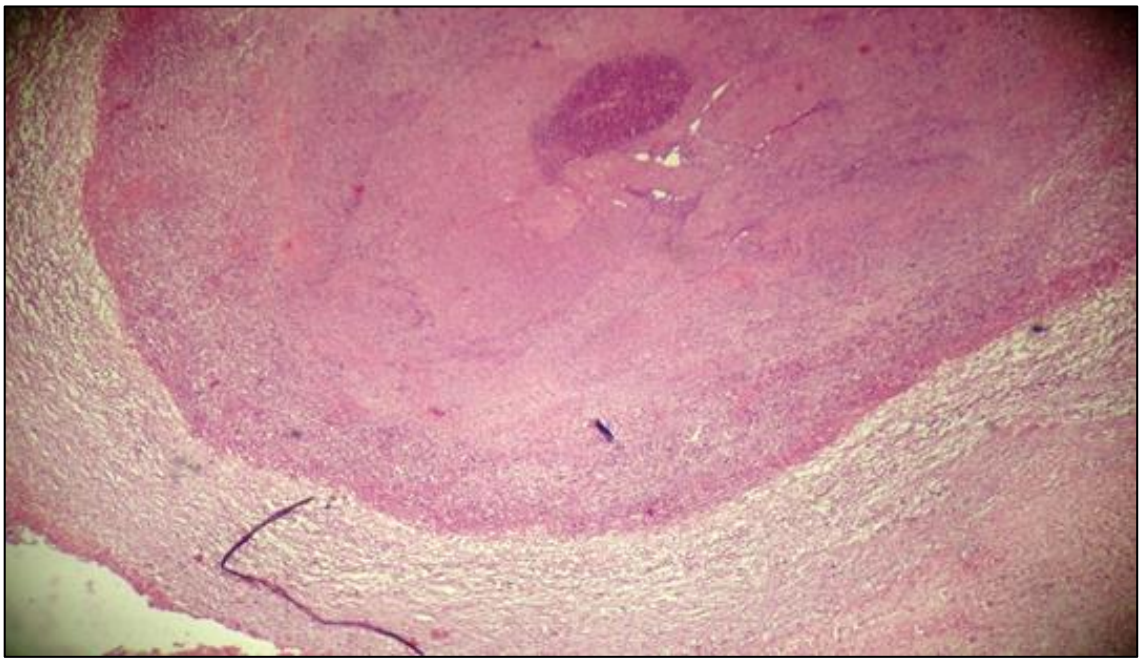

Fig 2: Photomicrograph of liver showing calcified and case necrotic area surrounded by a dense layer of fibrotic connective tissue (H&E, 40x)

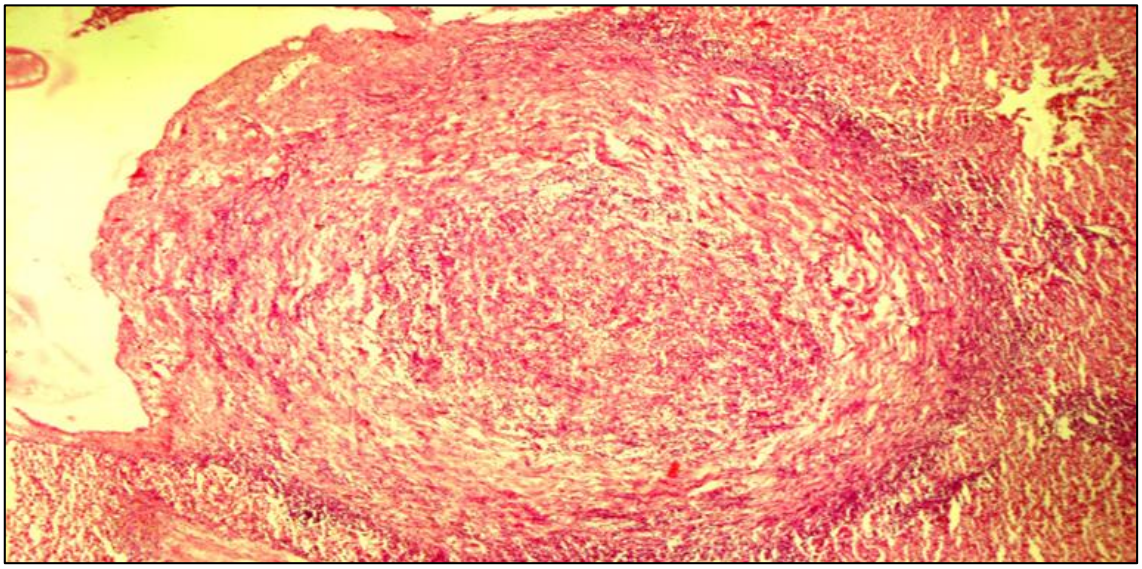

Fig 3: Photomicrograph of liver showing abscess (H&E, 40x)

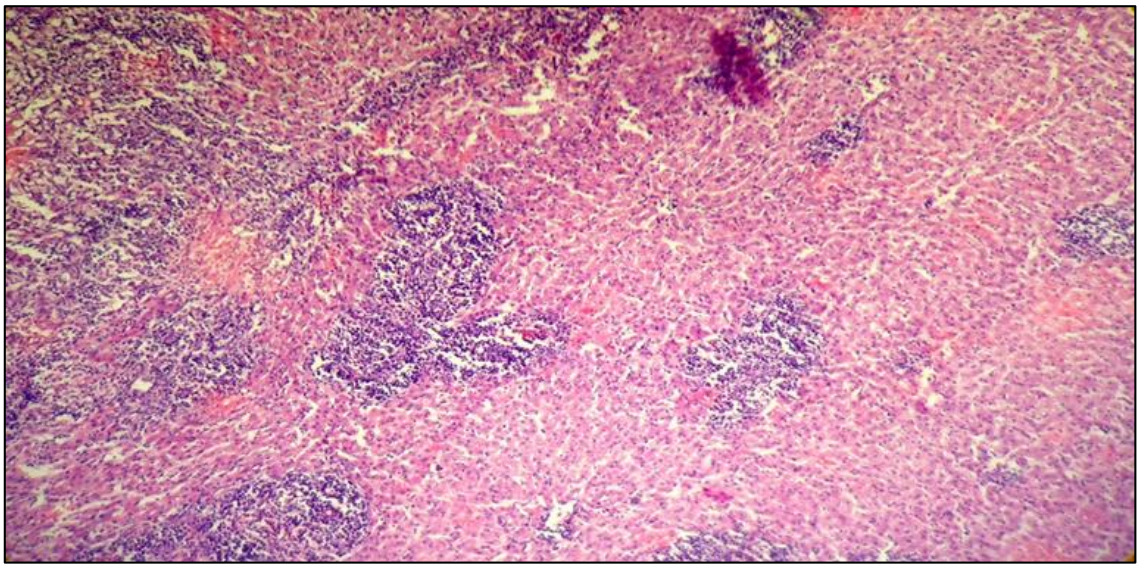

Fig 4: Photomicrograph of liver showing numerous micro abscess (H & E, 100x)

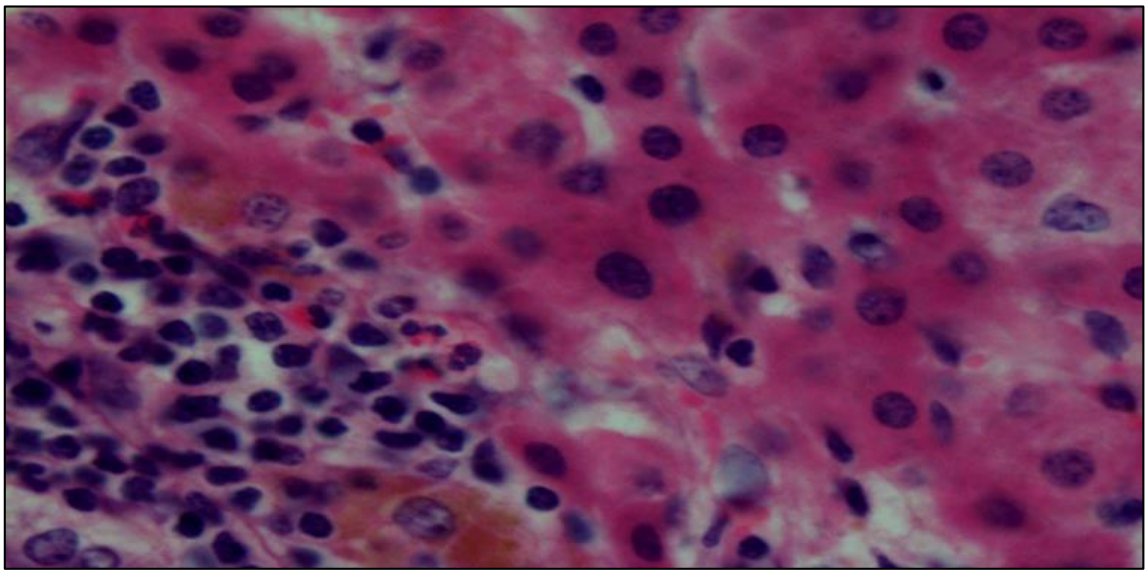

Fig 5: Photomicrograph of micro abscess in liver showing necrotic area surrounded by inflammatory cells (Giant Cells), (H&E, 1000x)

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