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Histopathological findings in liver in reference to calf diarrhoea (*Bubalus Bubalis*)

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Abstract

The present investigation was carried out from September 2020 to August 2021. During this period a total number of 232 buffalo calves were collected irrespective of breed, sex and age examined for histopathology. The affected liver tissue samples were further processed for histopathological examination and revealed liver abnormalities in 86 samples. The various conditions of liver such as necrosis 3.44%, congestion 13.79%, inflammation 6.89%, hemorrhages 9.91%, necrotic foci 2.15% and cloudy swelling 0.86%.

Keywords: Necrosis, congestion. Inflammation, hemorrhages, necrotic foci, cloudy swelling

Introduction

India is the highest buffalo milk producer in the world with over 20 breeds of river buffaloes. Among these, Murrah and Jaffarabadi are popular because of high milk yield. Dairy industry is of crucial importance to India. The country is the world's largest milk producer, accounting for more than 13 per cent of world's total milk production (2018). It is the world's largest consumer of dairy products, consuming almost 100 per cent of its own milk. Successful development of livestock depends upon proper health management. Diseases are the major cause of economic losses due to mortality, cost of treatment and inefficient production of livestock. Diseases are the main constraint in development of livestock in the country. Morbidity and mortality among the neonates have always proved a bottleneck and causes serious blow to the roots of dairy husbandry in India. Buffalo calf mortality leads to losses in buffalo milk yield and also reduces the overall output of livestock production (Singh *et al.*, 2009) [3].

Materials and Methods

For the proposed investigation, samples of the organ of the liver of buffalo calves (*Bubalus bubalis*) irrespective of age, sex and breed were collected from carcasses that were died due to diarrhea irrespective of sex, age and breeds groups subjected to post-mortem examination in the various Veterinary hospitals, and rural areas in and around Bikaner district of Rajasthan. The tissue samples were also collected from the carcasses of calves submitted to the Department of Veterinary Pathology, College of Veterinary and Animal Science, Bikaner for routine post-mortem examination. Gross examinations of the specimens were done at the time of post-mortem examination. During post-mortem examination, the samples were thoroughly examined grossly for alterations in morphology in terms of shape, size, colour, consistency, location and presence of cysts, tumours and abscesses *etc.* lesions. A total number of 232 buffalo calves were collected irrespective of breed, sex and age examined for histopathology. Following collection, all the representative tissue samples were properly preserved in 10 per cent formalin. The tissue 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, 1965) [1]. The sections of 4-6 micron thickness were cut and stained with routine staining method by hematoxylin and eosin. The results were recorded by gross observations and microphotographs.

Results and Discussion

The present investigation was carried out from September 2020 to August 2021. During this

period a total number of 86 representative samples of liver showing gross lesions were processed for subsequent histopathological examination.

Liver

Grossly, Haemorrhagic area observed immediately beneath the capsule. In certain areas, the hemorrhages were seen to extend deep into the parenchyma separating the hepatic cell. Some sections revealed a large number of erythrocyte, leucocytes and few fibrin strands occupied where hepatocytes were degenerated or destroyed.

Congested livers were slightly and diffusely enlarge dark reddish to brown. On a cut large amount of blood-tinged fluid oozed out. In case of hepatitis, a size of liver was enlarged due to which liver capsule was tensed and stretched. The liver

became pale and fragile. In case of necrosis, livers were normal in size with sharp edges. Similar findings were reported by Nidhi (2012) [2]; Singh *et al.* (2013) [4] and Sarvan (2017) [5].

Microscopically, Liver showed excessive dilation of central vein, mild fibrosis and infiltration of mononuclear cells. Some cases showed fibrosis around the congested central vein and infiltration of mononuclear cells. Fibrous tissue proliferation in the portal tract and diffuse infiltration of leucocytes. Other cases showed diffuse lymphocytic infiltration, fibrosis and arteriosclerosis. Some cases showed liver showing focal infiltration of mononuclear cells along with fibrosis. Similar findings were reported by Nidhi (2012) [2]; Singh *et al.* (2013) [4] and Sarvan (2017) [5].

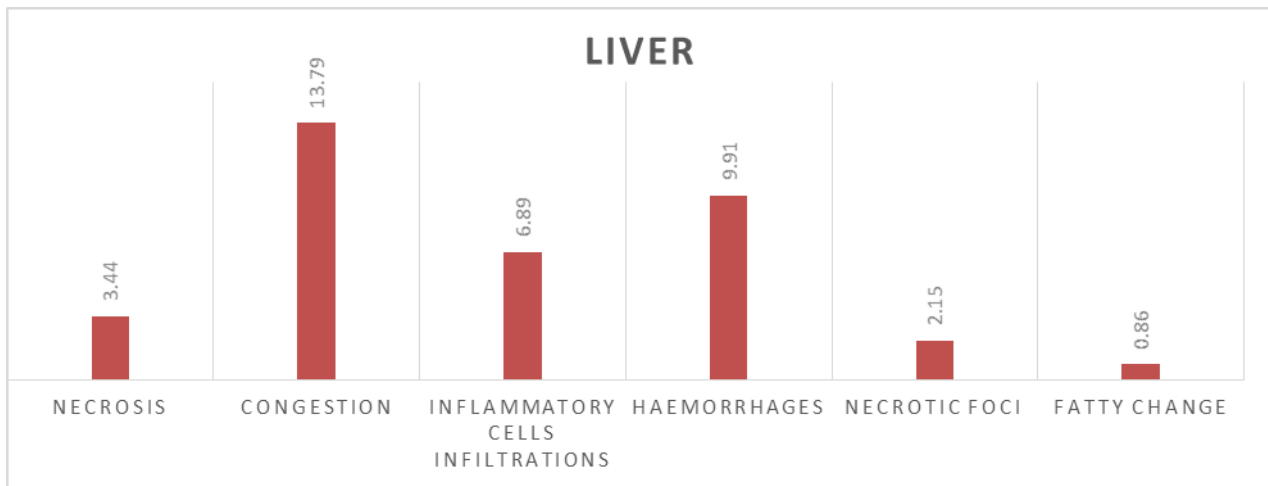


Fig 1: Bar diagram showing no. of cases (percentage) having abnormalities in liver.

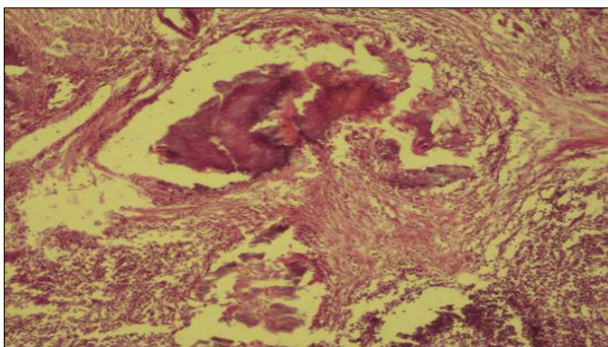


Fig 2: Necrosis: Photomicrograph of liver showing fibrosis around the congested central vein and infiltration of mononuclear cells. H&E 40X.

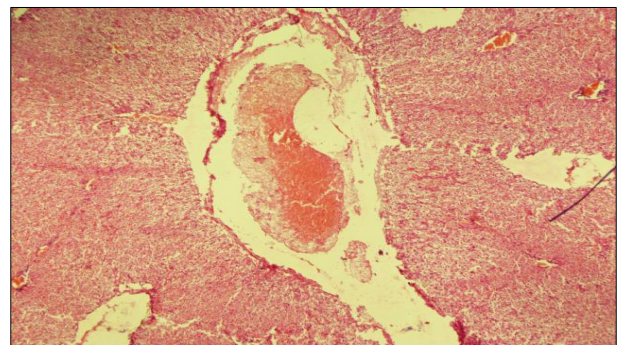


Fig 4: Congestion: Photomicrograph of liver showing congestion and excessive dilation of central vein degeneration of hepatocytes near central vein. H&E 40X.

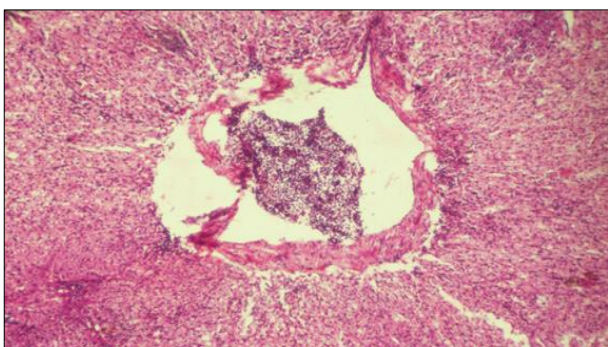


Fig 3: Inflammation: Photomicrograph of liver showing mild fibrosis around central vein along with infiltration of polymorphonuclear cells. H&E 100X.

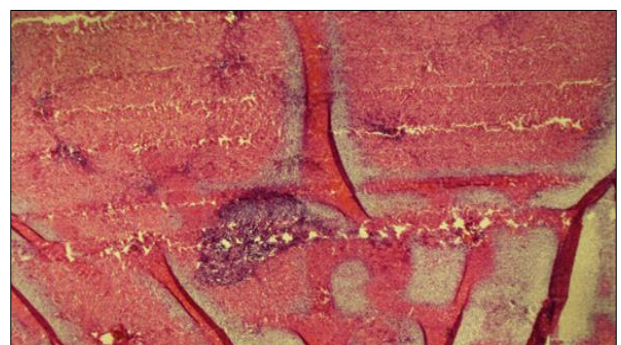


Fig 5: Necrotic foci: Photomicrograph of liver showing necrosis, hemorrhages and focal infiltration of mononuclear cells. H&E 100X

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