SEPTICEMIA IN A MURRAH BUFFALO CALF: A CASE REPORT

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ABSTRACT

The proper care and management of the newborn calves plays a pivotal role in successful dairy farming. Present case is pathological investigation of a male Murrah calf submitted for postmortem. The case shows septicemia by gross and microscopic examination.

Keywords: calf, colostrums deprivation, gross/ microscopic lesions, septicemia, wound

INTRODUCTION

Perinatal and neonatal phase in calf's life is extremely vulnerable for attack by many infectious agents. As immune system of calf is in developing stage, proper colostrum management is much more important as this is the only way through which mother provides a passive immunity in the form of antibodies to the newborn. Scientific feeding of colostrum along with other health care management are mandatory factors in calf management (Tiwari *et al*., 2007). Failure to this causes less chances of calf survival or even if survived, mostly it will be sub productive in later life. The mixed bacterial flora is responsible for the infection in such cases. These infectious agents mainly attack two vital systems namely respiratory and digestive system (Shimizu and Nagatoma, 1978). The pathogens enter in the body of calf through various routes, which ultimately move forward to septicemia, enteritis and death of calf (Blood *et al*., 1994).

HISTORY

The carcass of 12 days old male Murrah buffalo calf was submitted to the Division of Pathology, IVRI, Izatnagar. As per the history provided, the calf was showing reluctance in normal activities, inappetant, diarrheic and was weak in condition. Calf was under treatment for the wound near left stifle joint.

Gross findings

Soon after receipt at the post mortem facility, the carcass was thoroughly examined which revealed the presence of multiple suppurative lesions over skin near the left stifle joint and also area between sternum and right axilla (Figure 1). Calf was diarrheic.The carcass was opened for detailed gross examination, on which the prescapular lymph nodes showed about 2 to 3 times enlargement than normal size with prominent cortex. Surface of heart was anemic and epicardial haemorrhages were present in coronary groove. The renal capsule was thickened and on transverse section, medullary areas showed mild to moderate congestion (Figure 2). Abomasum

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was moderately congested, edematic with diffuse petechial hemorrhages on mucosal surface. Both small and large intestines were severely congested and watery contents were observed in later one. Mesenteric, ileo-cecal lymph nodes were about 2 to 3 times swollen and moderately congested. Brain showed oedema along with severe congestion of cerebral blood vessels (Figure 3).

Histological findings

The morbid samples were collected and fixed in the 10% neutral buffered formalin for 48 h. After proper fixation, the samples were subjected to paraffin embedding technique and stained with hematoxylin and eosin as method described by Luna (1972).

On microscopic examination, skin revealed a liquifactive necrosis of deeper layers of dermis with moderate to severe infiltration of neutrophils. Formation of pyogenic membranes was a prominent finding (Figure 4). Liver showed fatty degeneration in hepatocytes in periportal area (Figure 5). Splenic capsule and trabeulae were thickened. Sub capsular area of spleen was moderately engorged with erythrocytes. Lung parenchyma revealed the alveolar atelectasis surrounded by the area of ruptured alveololar walls due to emphysema. Broncheolar lining epithelium was hyperplastic.Cortical blood vessels of the lymph node was moderately congested, there was a depletion of lymphoid cells. Intestinal histology revealed the engorgement of both mucosal and submucosal areas by erythrocytes. Intestinal lumen was comprised of inflammatory exudates of desquamated epithelium and inflammatory cells while lining epithelium showed moderate hyperplasia (Figure 6). Renal cortex and medulla both were congested, hyper-cellularity of the glomerulus was present and tubular epithelial cells were detached from its basement membrane (Figure 7). Cerebrum showed the moderate gliosis reaction along with the moderate congestion of blood vessels (Figure 8).

DIAGNOSIS AND DISCUSSION

The gross and microscopic observations suggest the septicemia condition. Infection might have gained entry through skin wounds and after the local infection at the site of entry it has disseminated to various body organs such as liver, spleen, lungs, brain, and intestine. The main lesions include congestion, degenerative and inflammatory changes.These changes are normally associated with the spread of the bacteria and their toxins in the body. These toxins cause failure in normal functioning of the vital organs thereby causing shock and death.

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Figure 1. Wound near left stifle joint.

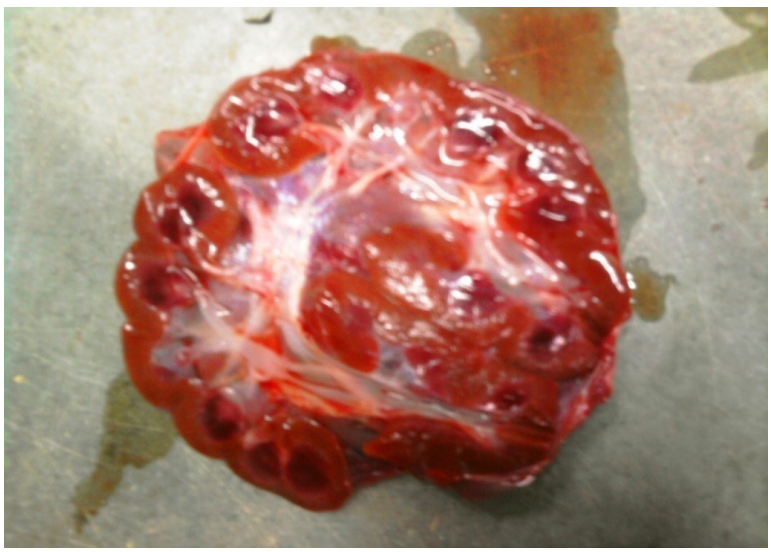

Figure 2. Congested kidney.

Figure 3. Congestion of brain with mild edema.

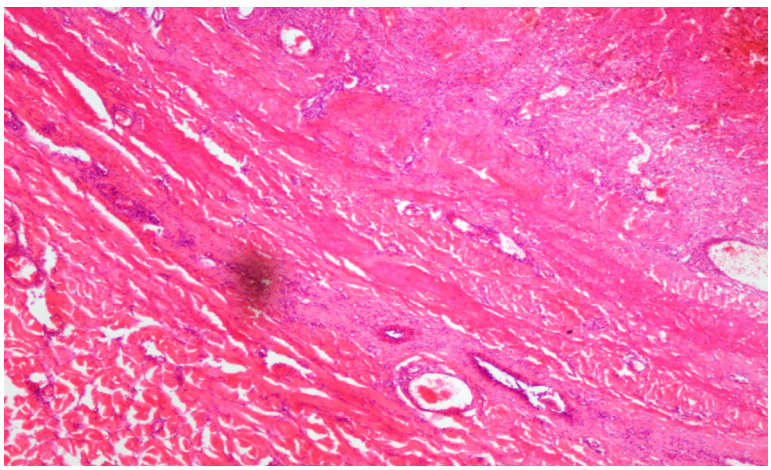

Figure 4. Presence of pyognenic membranes in skin (10X).

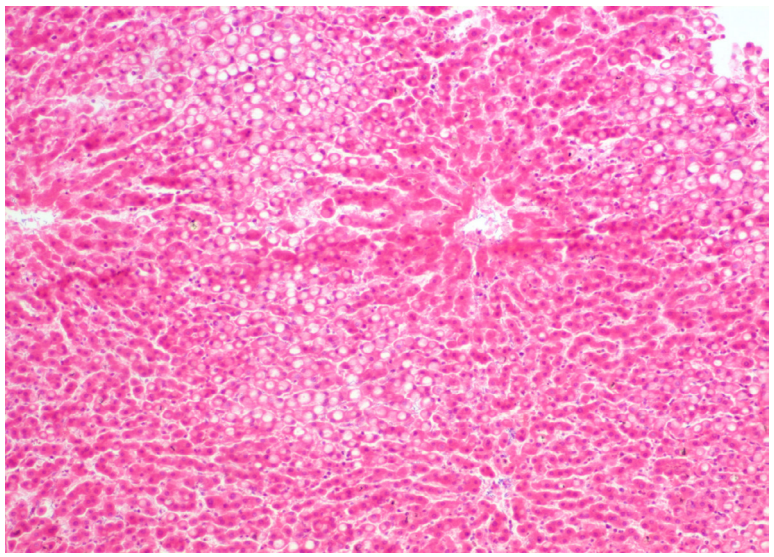

Figure 5. Fatty degeneration of hepatocytes in periportal region (10X).

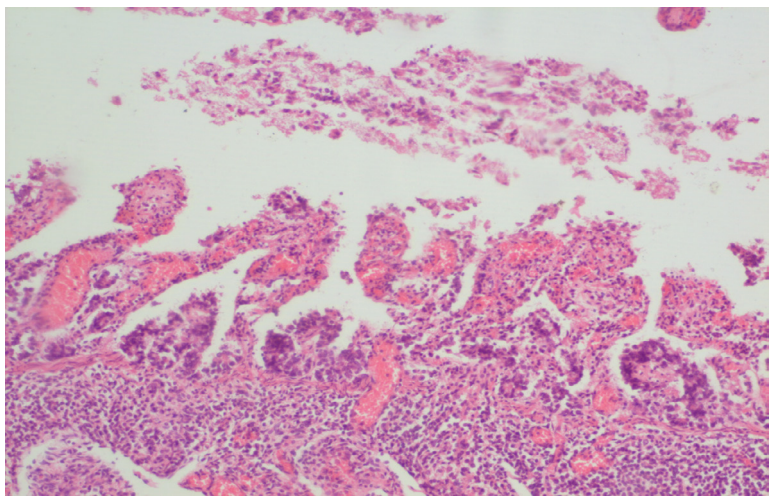

Figure 6. Necrotic debris in intestinal lumen with degenerative changes (10X).

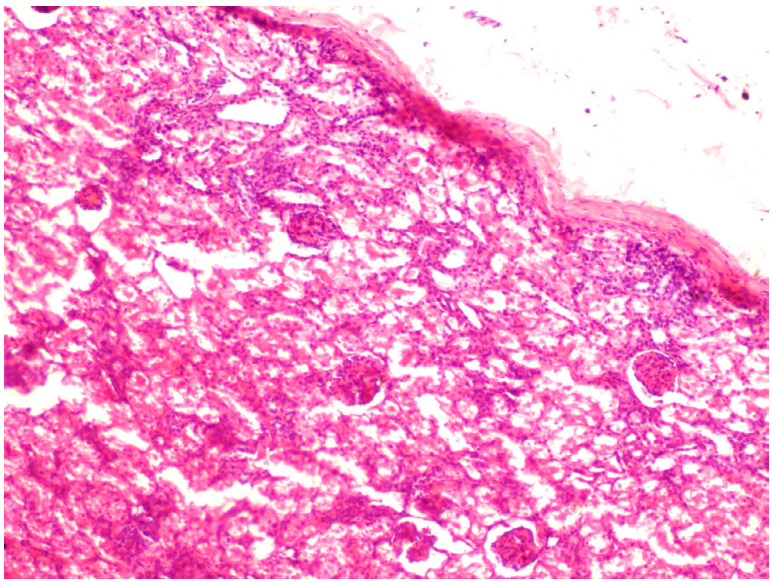

Figure 7. Thickening of renal capsule (10X).

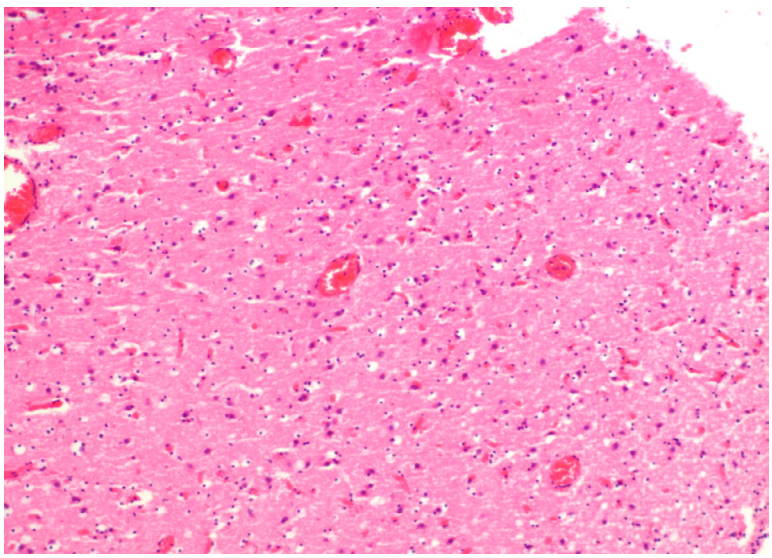

Figure 8. Gliosis of cerebral parenchyma.