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ORIGINAL ARTICLE

Haematological Alterations in Buffaloes Affected with Traumatic Reticulitis

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ABSTRACT

Background: Traumatic reticulitis is a common digestive disorder in bovines caused by the ingestion of metallic foreign bodies that penetrate the reticulum and induce inflammatory reactions.

Aim: The present study was conducted to evaluate haematological alterations in buffaloes affected with traumatic reticulitis.

Materials and Methods: A total of 12 buffaloes presented to the veterinary hospital with clinical signs suggestive of traumatic reticulitis were included in the study along with 10 healthy buffaloes serving as controls. Blood samples were collected for haematological analysis including haemoglobin concentration (Hb), total erythrocyte count (TEC), total leukocyte count (TLC), packed cell volume (PCV), and differential leukocyte count (DLC).

Results: The results revealed a significant decrease in Hb, TEC, and PCV values in affected buffaloes compared with healthy controls. Conversely, TLC and neutrophil percentages were significantly elevated, indicating inflammatory response and infection. Lymphocyte percentages were comparatively decreased in affected animals.

Conclusion: The findings suggest that traumatic reticulitis in buffaloes is associated with anaemia and leukocytosis with neutrophilia. Haematological evaluation can therefore serve as a useful supportive diagnostic tool in the clinical assessment of traumatic reticulitis in buffaloes.

KEYWORDS

• Buffaloes • Haematology • Traumatic Reticulitis

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INTRODUCTION

Buffaloes play a vital role in the livestock economy of many developing countries, particularly in Asia, contributing significantly to milk production, meat supply, and draft power. However, their productivity is often compromised by several metabolic and digestive disorders that adversely affect health and performance. One such important condition is traumatic reticulitis, commonly referred to as hardware disease (Radostits *et al.,* 2007). Traumatic reticulitis occurs due to ingestion of sharp metallic objects such as nails, wires, or needles that accumulate in the reticulum. The contraction of the reticulum may force these objects to penetrate the reticular wall, leading to inflammation, infection, and occasionally peritonitis or pericarditis (Ahmed *et al.,* 2023). The disease is characterized by clinical signs such as anorexia, reduced milk yield, fever, abdominal pain, arched back posture, and reluctance to move (Gugjoo *et al.,* 2021).

Haematological examination is an important diagnostic aid in evaluating inflammatory and infectious diseases in animals. Changes in parameters such as haemoglobin concentration, erythrocyte count, leukocyte count, and differential leukocyte distribution provide valuable insights into the physiological and pathological status of animals (Jain, 1993), also plays a crucial role in the clinical diagnosis and monitoring of traumatic reticulitis in buffaloes and other bovines (Prajapati *et al.,* 2022). In traumatic reticulitis, inflammatory processes and secondary infections can result in significant haematological alterations, including leukocytosis, neutrophilia, and changes in erythrocytic parameters (Constable *et al.,* 2017; Radostits *et al.,* 2007). Alterations in erythrocytic parameters are also frequently observed in affected animals. Decreased hemoglobin concentration, reduced packed cell volume, and lower total erythrocyte counts have been documented in buffaloes suffering from traumatic reticulitis or its complications such as traumatic reticuloperitonitis and traumatic pericarditis. These changes are often attributed to chronic inflammation, reduced feed intake, and impaired nutrient utilization leading to mild anemia. (Jogdand *et al.,* 2024).

Therefore, the present study was undertaken to investigate the haematological alterations in buffaloes affected with traumatic reticulitis and to compare them with healthy buffaloes.

MATERIALS AND METHODS

The study was conducted on buffaloes presented to the Veterinary Dispensaries in and around Tirupati, Andhra Pradesh with a history and clinical signs suggestive of traumatic reticulitis. A total of 12 buffaloes diagnosed with traumatic reticulitis were selected for the study. Additionally, 10 apparently healthy buffaloes maintained under similar management conditions were selected as controls. All animals were subjected to detailed clinical examination. Diagnosis of traumatic reticulitis was based on clinical signs such as: anorexia, decreased rumination, fever, tachycardia, pain-associated immobility, kyphotic posture etc.

Blood samples were collected aseptically from the jugular vein using sterile syringes. Approximately 5 ml of blood was collected into EDTA-coated vacutainer tubes for haematological analysis. The following haematological parameters were determined using standard laboratory procedures: Total erythrocyte count (TEC), Total leukocyte count (TLC), Haemoglobin (Hb), Packed cell volume (PCV) and Differential leukocyte count (DLC).

The data obtained were statistically analysed using Student's t-test to determine the significance of differences between affected and healthy groups. Values were expressed as mean ± standard error (SE).

RESULTS AND DISCUSSION

The mean haematological values observed in buffaloes affected with traumatic reticulitis and healthy controls are presented in Table 1.

Table 1: Hematological parameters of healthy and affected Buffaloes

Parameter	Healthy Buffaloes	Affected Buffaloes
TEC ($\times 10^6/\mu L$)	6.4 ± 0.21a	4.9 ± 0.24b
TLC ($\times 10^3/\mu L$)	8.7 ± 0.28a	13.8 ± 0.31b
Hemoglobin (g/dL)	12.6 ± 0.31a	8.9 ± 0.29b
PCV (%)	35.8 ± 1.03a	27.6 ± 1.06b
Neutrophils (%)	37.6 ± 1.08a	61.7 ± 1.12b
Lymphocytes (%)	54.2 ± 1.02a	31.8 ± 1.06b

Means with different superscripts in each row differ significantly ($P<0.05$)

Buffaloes affected with traumatic reticulitis showed significant ($P<0.05$) reductions in total erythrocyte count, haemoglobin, and packed cell volume compared to healthy buffaloes. In

contrast, total leukocyte count and neutrophil percentage were significantly increased, while lymphocyte percentage decreased. The decrease in haemoglobin concentration, TEC, and PCV observed in affected buffaloes indicates the presence of anaemia, which may be attributed to chronic inflammatory conditions and reduced feed intake associated with traumatic reticulitis. Chronic inflammation and decreased nutritional intake may impair erythropoiesis and contribute to mild to moderate anaemia in affected animals. Similar haematological alterations have been reported in bovines suffering from traumatic reticuloperitonitis and other inflammatory conditions of the fore stomach (Choudhary *et al.,* 2025; Gugjoo *et al.,* 2021; Prajapati *et al.,* 2022; Sudhakara Reddy *et al.,* 2015). The significant increase in total leukocyte count observed in affected animals indicates leukocytosis, which is commonly associated with inflammatory and infectious processes (Radostits *et al.,* 2007; Constable *et al.,* 2017; Kumar *et al.,* 2022). Neutrophilia observed in this study reflects the body's immune response to tissue injury and bacterial infection caused by penetrating foreign bodies in the reticulum. Previous studies on cattle and buffaloes with traumatic reticuloperitonitis have also documented leukocytosis accompanied by neutrophilia as a consequence of acute inflammatory reactions and secondary bacterial invasion (Prajapati *et al.,* 2022; Choudhary *et al.,* 2025).

The reduction in lymphocyte percentage observed in the present study may be attributed to stress-related corticosteroid release and redistribution of lymphocytes during inflammatory reactions. Such changes are often associated with stress leukograms observed in animals suffering from systemic inflammatory conditions (Scatà *et al.,* 2024). Similar haematological patterns, including increased neutrophils and decreased lymphocytes, have been reported in bovines affected by traumatic reticulitis and related digestive disorders (Gugjoo *et al.,* 2021; Choudhary *et al.,* 2025).

Traumatic reticulitis in buffaloes is commonly associated with marked hematological alterations due to inflammatory reactions and secondary bacterial infections resulting from penetration of the reticular wall by sharp metallic foreign bodies. Hematological evaluation often reveals significant leukocytosis accompanied by neutrophilia, which reflects an acute inflammatory response and tissue damage within the reticulum and surrounding peritoneal structures. Several clinical studies on bovines with traumatic reticuloperitonitis have reported increased total leukocyte count and neutrophil percentage along with decreased lymphocyte counts, indicating a stress-related leukogram and systemic inflammatory response. (Gugjoo *et al.,* 2021; Prajapati et al., 2022; Choudhary *et al.,* 2025). The evaluation of hematological parameters such as hemoglobin concentration, erythrocyte count, total leukocyte count, and differential leukocyte count plays a crucial role in the clinical diagnosis and monitoring of traumatic reticulitis in buffaloes and other bovines (Prajapati *et al.,* 2022).

The haematological findings observed in this study support the presence of inflammatory pathology associated with traumatic reticulitis and highlight the diagnostic value of blood examination in affected buffaloes.

CONCLUSION

The present study demonstrated that buffaloes affected with traumatic reticulitis exhibit significant haematological alterations characterized by decreased haemoglobin, erythrocyte count, and packed cell volume, along with increased leukocyte count and neutrophilia. These changes indicate anaemia and inflammatory response associated with the disease. Haematological evaluation can therefore serve as a useful supportive diagnostic tool in the clinical diagnosis and management of traumatic reticulitis in buffaloes.

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