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## A clinical study on pneumonia in buffaloes in the Haryana state

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### Abstract

Pneumonia refers to inflammation of the pulmonary parenchyma which is characterized by clinical signs like depression, fever, serous to mucopurulent nasal discharge, moist coughing, increase in the respiratory rate, changes in the depth and character of respirations, coughing, abnormal breath sounds on auscultation. The present study was undertaken to analyse haematological changes, radiographic findings and therapeutic management of pneumonic buffaloes presented to TVCC, LUVAS, Hisar during April to July, 2022. Pneumonia in these animals was confirmed by the radiographic examination. A total of 2ml of blood was collected from a total of 30 buffaloes with pneumonia of varying severity. Statistical analysis of blood samples showed that there was significant association between age of pneumonia affected animals and monocytes ( $p=0.004$ ). 33.33% ( $n=10/30$ ) of the animals affected with severe pneumonia were of 3-6 years of age. 76.67% ( $n=23/30$ ) of pneumonia affected animals have increased neutrophil count and highest number of these cases were recorded in animals of greater than 6 years of age. Animals were treated with non-steroidal anti-inflammatory drugs, bronchodilator drugs, supportive therapy with anti-oxidants etc., and antimicrobial drugs to treat bacterial infections.

**Keywords:** Pneumonia, pneumonic buffaloes, TVCC, LUVAS

### Introduction

Pneumonia refers to inflammation of the pulmonary parenchyma usually followed by involvement of pulmonary bronchioles (Broncho-pneumonia) and often pleurisy (Pleuro-pneumonia). Viruses, bacteria, or a combination of both, fungi, metazoan parasites and physical and chemical agents are the etiological agents associated with pneumonia (Radostits *et al.*, 2006) [3]. Pneumonia is characterized by an increase in the respiratory rate, changes in the depth and character of respirations, coughing, abnormal breath sounds on auscultation. Inflammation associated with bovine bacterial respiratory disease can lead to significant pulmonary damage and reduced lung function (Radostits *et al.*, 2006) [3]. Based on etiological agents, pneumonia may be classified as bacterial, viral, mycoplasmas, parasitic, aspiration, allergic, hypoplastic etc. (Radostits *et al.*, 2007) [2]. Among various diseases of animals, it is one of the most common causes of deaths. Clinical signs in affected animals include depression, fever ( $104^{\circ}$ - $106^{\circ}$ F), serous to mucopurulent nasal discharge and moist cough. The diagnosis of bovine bacterial respiratory disease poses significant challenge to the clinician. The clinical signs alone may not be diagnostic and therefore diagnostic laboratory is often used to assist the clinician.

Haematological alteration helps in ruling out causative agent i.e., bacterial, viral, parasitic etc. and indicates the severity of the pneumonia. Haematological examination of cattle and buffaloes with pneumonia usually reveals significant increase in mean leukocyte, neutrophil, lymphocyte, monocyte, and eosinophil counts. Neutrophils are the first leucocyte cells which arrives at the site of injury or infection. Radiographic examination helps in finding type of pneumonia, area of lesions, severity of pneumonic changes etc. The present study was undertaken with the following objectives i.e., to analyse haematological changes, radiographic findings and therapeutic management of pneumonic buffaloes presented to TVCC, LUVAS, Hisar during April to July, 2022.

## Materials and Methods

A total of 30 buffaloes presented to Teaching Veterinary Clinical Complex, LUVAS, Hisar with inappetence, lethargy, watery to mucoid nasal discharge, coughing, open mouth breathing, forceful respiration, brisket oedema (fig. 1) etc. during April to July, 2022 were taken under study. Pneumonia in these animals was confirmed by the radiographic examination and severity of the disease was assessed based on the degree of pathological changes in the lungs. A total of 2ml of blood was collected from buffaloes confirmed to be suffering from pneumonia in EDTA vial from jugular vein of animals for their haematological study. Haemoglobin, packed cell volume (PCV), total leucocyte count (TLC) and differential leucocyte count were studied. Blood was analysed with the help of haemato-analyser (MS4Se-melet Schloesing Laboratories- France).



**Fig 1:** Buffalo with brisket oedema

Haematological examination values were recorded in Microsoft Excel 2010 and value were compared with reference values as given in the table 1. Statistical analysis was carried out using IBM SPSS Statistics 23.0 software.

**Table 1:** Normal reference range of haematological parameters

Blood parameter	Reference range
Haemoglobin	8-14 g%
Packed Cell Volume	26-42 %
Total Leucocyte Count	4-12 × 1000 per cumm
Neutrophils	15-45 %
Lymphocytes	48-75 %
Monocytes	2-7 %
Eosinophils	2-15 %
Basophils	0-2 %

## Result and Discussion

The study revealed, 53.34% of animals had severe pneumonia, 33.33% had moderate and 13.33% had mild pneumonia on radiographic examination (table 2).

**Table 2:** Prevalence of pneumonia of different severeness in buffaloes of Haryana

Severeness of pneumonia	No. of Cases	Prevalence (%)
Mild Pneumonia	4	13.33%
Moderate Pneumonia	10	33.33%
Severe Pneumonia	16	53.34%
Total	30	100.00%

**Table 3:** Prevalence of pneumonia in different age groups

Age of pneumonic animal	No. of cases	Prevalence (%)
Less than 3 years	1	3.33%
3-6 years	15	50%
More than 6 years	14	46.67%
Total	30	100.00%

The highest occurrence of pneumonia was noticed in 3-6 years age group (50%), followed by more than 6 years age group (46.67%) and less than 3 years age group of animals. The 33.33% (n=10/30) of animals affected with severe pneumonia (Fig. 2) were of 3-6 years of age. Venkatesakumar *et al.* (2016) [5] also reported highest incidence of pneumonia in cattle was noticed in 3-5 years age (35.71 %). 76.67% (n=23/30) of pneumonia affected animals have increased neutrophil count and highest number of these cases were recorded in animals of greater than 6 years of age. Venkatesakumar *et al.* (2016) [5] and Kumar *et al.* (2017) [11] also reported an increase in neutrophil count upon haematological examination in respiratory diseases like bacterial pneumonia.



**Fig 2:** Buffalo with severe pneumonic changes

Statistical analysis of blood samples showed that there was significant association between age of pneumonia affected animals and monocytes (p=0.004). However, there was no significant association of age of pneumonic animals with haemoglobin (p=0.602), PCV (p=0.378), total leucocyte count (p=0.310), neutrophils (p=0.736), and lymphocytes (p=0.744). No statistical analysis was computed because eosinophils and basophils codes were constant.

## Treatment

The buffaloes were treated with Ceftiofur sodium 2 mg/Kg b.wt. Intramuscularly daily for a period of five days, Flunixin meglumine 1.1 mg/Kg b.wt. Once in a day intramuscularly and Chlorpheniramine maleate 0.5 mg/Kg b.wt. Once in a day intramuscularly for 3 days were administered (Reddy *et al.*, 2018) [4]. Electuary was given 100mg/ kg b.wt. Orally for 5 days was given for its immunomodulatory, anti-inflammatory, soothing and expectorant effects. Corticosteroids were used as anti-inflammatory in acute pneumonia cases. Steam inhalation was given twice daily for one week with levosalbutamol inhalation solution for bronchodilator effect.

## Conclusion

Pneumonia in animals can be managed by appropriate therapy with non-steroidal anti-inflammatory drugs, bronchodilator

drugs, supportive therapy with anti-oxidants, multivitamins etc., and antimicrobial drugs to treat bacterial infections.

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