PREVALENCE AND DISTRIBUTION OF PNEUMONIC LESIONS IN GOATS

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ABSTRACT

A study was conducted on prevalence and distribution of pneumonic lesions in goats. Total 97 cases were examined. Lung lesions were observed in 67.03% of goats. Detailed gross and microscopic study was conducted on fifty post mortem cases. 82% lungs were affected bilaterally. Gross examination revealed areas of emphysema, congestion, consolidation, pulmonary edema, pleural adhesion, lung abscess and nodular growth. Maximum number of bronchopneumonia was diagnosed followed by interstitial pneumonia and only a single case of granulomatous pneumonia. Maximum cases of pneumonia showed diffuse pattern of lesions and only ten cases were having a multifocal pattern of lung lesions along with solitary case of local extensive lesions. Histopathology was conducted on most affected lobe of lung. Microscopic changes corroborated with gross lesions in target organ.

KEY WORDS: Goat, Lung lesions, Pneumonia

INTRODUCTION

Pneumonia is one of the most common respiratory problems in small ruminants throughout the world. Pneumonia in goats may be caused by bacteria, viruses, parasites (primarily lung worms) and allergic reactions. The disease may be very acute or chronic. The most frequent causes of respiratory infection and death are *Pasteurella multocida* or *Mannheimia haemolytica* (previously called *Pasteurella haemolytica*). The organisms are found in the nostrils and the upper respiratory tract and can become pathogenic under certain stress conditions (Davies and Reilly, 2004). It has been demonstrated that stress or viral infection compromises defense mechanisms of the upper respiratory tract and lung, predisposing to an initial multiplication of bacteria in the nasopharynx and subsequently lungs are deluged with large numbers of bacteria. The present study deals with prevalence and distribution of lung lesions in goat during pneumonia. This is the first study conducted in Central India to know the prevalence of pneumonia and classifying its type in the goats.

MATERIALS AND METHODS

The work was conducted in Department of Veterinary Pathology, College of Veterinary Science and Animal Husbandry, Jabalpur. During the study period of 8 months (August 2012 to February 2013) post mortem examination of 97 goats of different age, breed and sex were conducted. Out of these goats on the basis of gross lesions pneumonia was diagnosed in 65 (67.03%) cases. For observing the microscopic lesions 50 cases were taken and from these tissue samples were collected from affected lobes of lung and lymph nodes and processed by standard procedures (Gridley, 1960). Lungs were examined for gross lesions emphasizing the location, colour, size, palpation, as well as examination of the cut surface of lesions and major airways as described by Thompson (1983). Distribution of lesions in different lobes of lungs was noted as Left apical, Left cardiac, Left diaphragmatic, Right apical, Right cardiac, Right intermediate and Right diaphragmatic.

According to the lesions' texture, distribution, appearance and exudation pneumonia was classified into four morphologically distinct types- Bronchopneumonia, Interstitial pneumonia, Embolic pneumonia and Granulomatous pneumonia. On the basis of inflammatory lesions and distribution

in the lungs, the pneumonia was also categorized to the cranioventral (most cases of bronchopneumonia), multifocal (embolic pneumonia), diffuse (interstitial pneumonia) and local extensive (granulomatous pneumonia).

RESULTS AND DISCUSSION

Lungs are the most exposed organs to different aggressions because of their anatomical and histological particularities. Out of the 97 post mortem conducted, 75 were adult and remaining 22 were kids. Amongst the adult goats 63 were female and 12 were male. Pneumonia was observed in 65/97 (67.03%) cases as determined by gross post mortem findings. Our results confirmed that pneumonia continues to be one of the most important causes of goat morbidity and mortality in our region.

Maximum per cent of pneumonia was observed in the months of December, January and February (100%, 73.33% and 100% respectively) where the ambient temperature was 18^0C, 15^0C and 18^0C respectively. Minimum prevalence of pneumonia was observed in the month of October (33.33%) and November (42.85%), the observed ambient temperature was 33^0C and 25^0C respectively, as the temperature start raising the per cent of occurrence of pneumonia increased to 71.42% and 72 .72% in the month of September and August respectively.

Ojo (1971) found that the incidence of pneumonia was highest in small ruminants during the rainy season and this may be because heavy rainfall is an important stress factor in pathogenesis of pneumonia in goats. Raji *et al.* (2000), stated that chilling, and rapid fall in temperature predisposes the respiratory tract of goats to infection.

In the present study 82% cases of bilateral pneumonia was observed in the right and left lungs both. The pneumonic lesions were observed in the cranial lobe (apical, cardiac and intermediate) in 52% cases, in the caudal (diaphragmatic) lobes only in 36% cases and in the all lobes in 12% cases.

Bilateral distribution of lesions was more common and consistently present in pneumonia in both bovine and caprine lung (Mohamed and Abdelsalam, 2008). Only 18% unilateral distribution was noted. Right lungs were more prone to pneumonia, seven out of nine right lungs were affected during unilateral pneumonia. The right lung could be more affected in goat as the trachea bifurcation is first to the right and the distance between the right and the left bifurcation was 1.5 ±0.35cm (Emikpe and Akpavie, 2010).

Consolidated lungs, visible exudation were grossly classified as bronchopneumonia. Macroscopically, the lungs affected by bronchopneumonia were found congested, having firm consistency, heavy, edematous, marbled lobules and fibrinous deposits. Lungs with elastic consistency and rib imprints were grossly classified as interstitial pneumonia (Tijjani *et al.,* 2012). Lungs with locally extensive nodular lesions were classified as granulomatous pneumonia. In the present study on the basis of lung lesions maximum number of bronchopneumonia (52.0%) were diagnosed, followed by 46.00% of Interstitial pneumonia. Only a single case of granulomatous pneumonia was observed in the left apical lobe and no lung lesion fulfilling the criteria of embolic pneumonia was observed.

Microscopic examination of the pneumonic lung tissues collected from 50 animals revealed emphysema (84%), atelectasis (76%), congestion (70%), haemorrhage (46%), thickening of alveolar septa (84%), infiltration (68%), fibrosis (76%) and areas of calcification (04%). More than one lesion was observed in a single lung tissue.

Pneumonia is initiated by an influx of blood in the lungs due to the obstruction of the pulmonary vessels. It is sometimes followed by pulmonary edema that, when the intravascular liquid spills in parenchyma and the alveoli (Radostits *et al.,* 2000).

Thus it can be concluded that there is a high prevalence of caprine pneumonia with highest incidence of bronchopneumonia, mostly affecting the cranial lobes, bilaterally, followed by interstitial pneumonia. Findings of the study could be of benefit in developing preventive and therapeutic measures for controlling respiratory infections in goats

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