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HISTOPATHOLOGICAL STUDY OF PULMONARY ANTHRACOSIS IN SHEEP

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Abstract: In the present study, the lungs of 120 sheep slaughtered in two local abattoirs were examined for anthracosis. Anthracosis was found in the lungs of 2 (1.66%) sheep, with no prominent gross pigmentation. One lung suspected for anthracosis was found to have consolidation. Histopathologically, focal accumulation of carbon particles along with severe haemorrhages, edema and mononuclear cells infiltration were observed.
Keywords: Ovine, Pulmonary anthracosis, Haemorrhages, Pneumonia.

Introduction

Anthracosis is the deposition of carbon particles or industrial dusts in the lungs (Manohar et al., 2006). The condition is frequent in animals reared in cities especially in dusty or smoky industrial and construction areas. Anthracosis is considered to be more common in human beings than animals because the former are more liable to be exposed to dust inhalation in occupations such as coal mining and in factories emitting smoke (Choudary et al., 1986 and Schoning et al., 1996). The lungs and associated lymph nodes preserve inhaled particles that also get lodged in connective tissue in inter alveolar septae, mononuclear phagocytes and epithelial tissue found freely suspended in bronchioles and alveoli (Sujatha et al., 2007). No data in relation to the economic implications of this condition in sheep has been documented. Also, little is known about the pathogenesis of anthracosis in animals and there have been relatively few findings reported. Thus, the aim of this study was to examine gross and histopathological findings in the lungs of sheep with anthracosis and to correlate its role in the occurrence of pneumonia

Materials and Methods

This study was performed in two local abattoirs of Kadapa district where sheep and goat are slaughtered daily. For the present study, two suspected lung samples were taken for histopathological examination. The collected lung samples were fixed in 10% neutral

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buffered formalin for histopathological examination. The samples were then dehydrated in graded ethanol and embedded in paraffin. Sections (5 μm thickness) were stained with haematoxylin and eosin and then, examined by an ordinary light microscopy.

Results and Discussion

In the present study, anthracosis was found in the lungs of two sheep (1.66%) out of 120 sheep examined. Grossly, no prominent pigmentation was detected in the lungs but in one suspected lung, cranio – ventral consolidation with areas of haemorrhages and congestion (Fig.1) were noticed. Histopathologically, the section showed carbon particle deposition in peribronchiolar region (Fig.2) and in pulmonary parenchyma (Fig. 3 & 4) with edema and haemorrhages. Focal areas of red hepatization surrounded by giant alveoli were also observed (Fig. 5).

Previously, the economical importance of anthracosis in sheep and other animal species has not been documented. The incidence of 1.66 % observed in the present report was in correlation with that Beytut (2002) who reported the incidence of anthracosis to be in 2.25 % of sheep in his study. Although carbon particles have been found in various tissues, the most common site is the lungs and associated lymph nodes. Macroscopically, parenchymal deposits of the pigment particles in these organs have been found as black, spotty to confluent areas of about 5mm in size or larger in humans (Vakharia et al., 1990) and cattle (Ozcan and Beytut, 2001). In the present study, prominent pigmentation was not detected grossly in the lungs. The lesser degree of pigmentation in sheep may be due to the lesser amount and duration of exposure to smoke.

Hence it can be concluded from the present study that there exists a positive causal relationship between anthracosis and occurrence of pneumonia. It seems these particles predispose animals to pulmonary diseases especially various types of pneumonia.

References

[1] Beytut E 2002 Anthracosis in the lungs and associated lymph nodes in sheep and its potential role in the occurrence of pneumonia. Small Ruminant Research, 46:15–21.

[2] Choudary C H, Mohan Rao M R K and Ali S 1986 Anthracosis in zoo animals and birds. Indian Veterinary Journal, 63: 869–870.

[3] Manohar B M, Korand A V, Vairamuthu S, Jayathangaraj M G and Senthil Kumar K 2006 Anthracosis in a Leaf Monkey (*Presbytis pileatus).* Tamilnadu Journal of Veterinary & Animal Sciences, 2: 112.

[4] Ozcan K and Beytut E 2001 Pathological investigations on anthracosis in cattle. Veterinary Record, 149: 90–92.

[5] Schoning P, Abraham J L and Burnett B R 1996 Silicate and metal dust in lungs of Greyhounds. American Journal of Veterinary Research, 57: 1006–1009.

[6] Sujatha K, Srilatha Ch and Babu S N 2007 Pulmonary Anthracosis in Large Wild Felids. Zoos' Print Journal, 22: 2902.

[7] Vakharia BM, Pietruk T and Calzada R 1990 Anthracosis of esophagus. Gastro intestinal Endoscopy, 36: 615–617.

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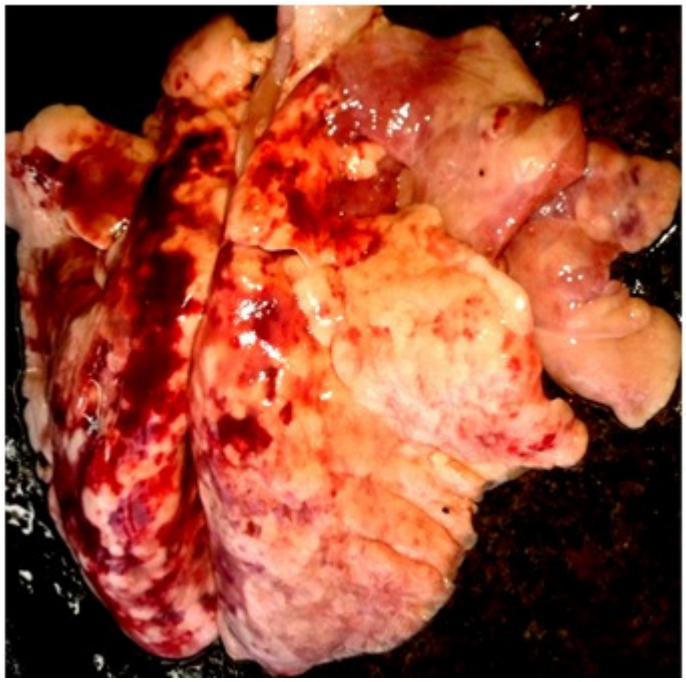

Figure. 1 Note cranio -ventral consolidation and haemorrhages

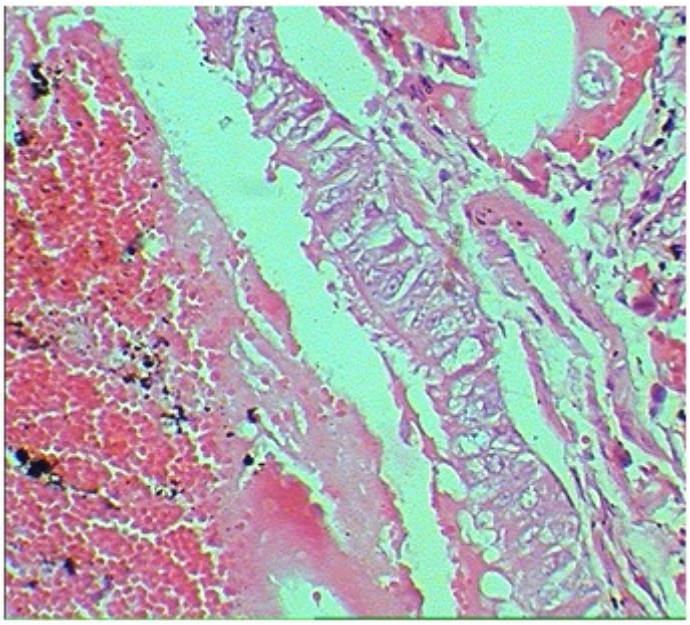

Figure. 2 Note peribronchiolar carbon particle deposition with severe haemorrhages H & E x 100.

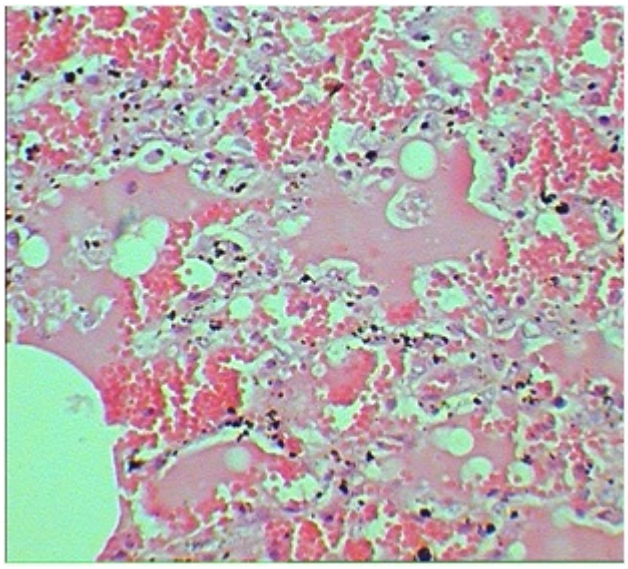

Figure. 3 Note focal areas of carbon particle deposition, edema and haemorrhages. H & E x 40.

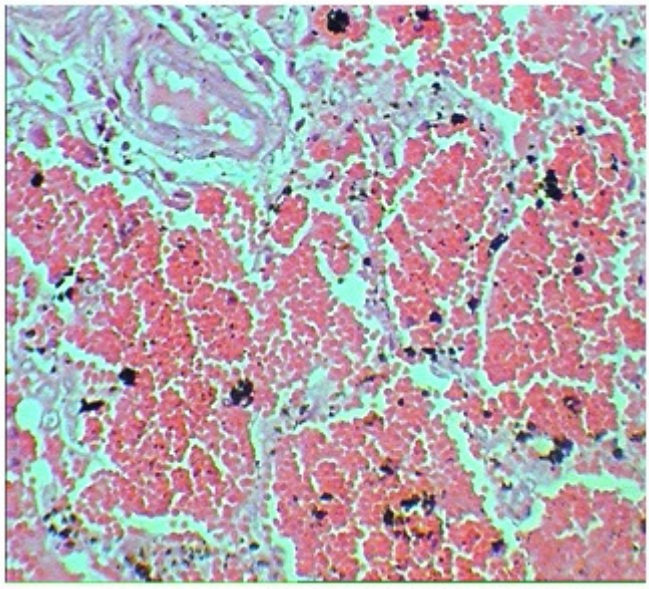

Fig. 4 Note focal areas of carbon particle deposition and severe haemorrhages H & E x 100.

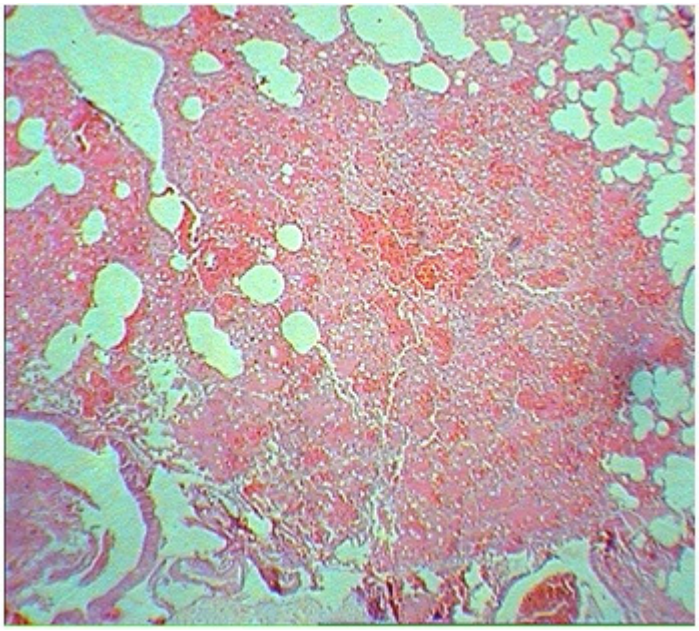

Figure. 5 Note stage of red hepatization and alveolar emphysema H & E x 40.