Pulmonary diseases in slaughtered cattle

4. Pathology of pulmonary lesions

AKM Anisur Rahman, Md Nooruddin, M Mokbul Hossain, M Siddiquur Rahman, Mohammad Arif Hossain, Hee-Jong Song

Department of Medicine and Pathology, Faculty of Veterinary Science, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh; Department of Paediatrics, Rajshahi Medical College, Rajshahi University, Rajshahi, Bangladesh. Bio-safety Research Institute, Chonbuk National University, Jeonju, 561-756, Korea

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Abstract

A study of pulmonary diseases in the slaughtered cattle (n = 125) of Mymensingh town was conducted to study pathological findings using the standard methods from September 2001 through April 2002. The pulmonary lesions observed in this study included congestion, emphysema, anthracosis, pleuritis abscess and hemorrhage. The histopathological findings of congestion were characterized by hemorrhage, a large number of leukocytes infiltration in the lumen of the alveoli, bronchitis, bronchiolitis, proliferation of fibrous connective tissue and hyperplasia of bronchiolar epithelia. Histopathologically, emphysema was identified by the distended alveoli with thin and atrophied alveolar walls. In anthracosis, carbon particles were found in stroma and alveolar lumen. In pleuritic lesions, there was a proliferation of fibrous connective tissue along with the infiltration of mononuclear reactive cells. Abscesses were characteristic of the accumulation of neutrophils surrounded by immature fibroblasts forming a capsule like structure.

Key words: Pulmonary diseases, Slaughtered cattle, Bangladesh

*Corresponding author:
Phone: +82-63-270-2562, Fax: +82-63-270-3780
E-Mail: hjsong@chonbuk.ac.kr
Introduction

The information on the various aspects of respiratory diseases in cattle and other animals has been reported from many countries of the world\(^1\)\(^2\). The frequency, seasonal distribution and pathology of pulmonary diseases in Bengal goats of Bangladesh have been reported by a few investigators\(^3\)\(^-\)\(^6\). However, the pathology of bovine pulmonary lesions and diseases have not been yet reported in Bangladesh. Thus, this study was designed to describe the gross and histological findings for the information of a few diseases in bovine lungs.

Materials and Methods

Physical examination of lungs

The bovine lungs (n = 125) were examined in the laboratory for gross lesions. The lesions were identified by their physical characteristics. Number, size, shape and other characteristics of lesions were recorded in sketch cards specifically designed for the purpose. The severity of pulmonary lesions was determined on the basis of size and a number of lesions as well as parts of lungs affected by individual lesions.

Histopathological study

The gross lesions of lungs were noted and suspected tissues along with normal part were cut into small pieces (about 1 to 2 cubic cm) and fixed in 10% buffered neutral formalin solution. The well fixed tissues were then washed in running tap water for 24 hours and dehydrated through a series of ascending grades of ethyl alcohol (70%, 80%, 95% and 100%). The tissues were cleared by two changes of chloroform and impregnated with two changes in paraffin at 58°C. Finally, they were embedded in liquid paraffin (58°C). The specimens in paraffin block were sectioned at 4 to 6 \(\mu\)m rotary microtome and placed in water bath (37-40°C) for spreading and the sections were taken on grease free clean glass slides and dried in air. The histologic sections were stained with Mayer's hematoxylin and eosin (H & E) following the routine procedure of histopathological studies\(^7\). The stained sections were then permanently mounted in Canada balsam with a cover slip.

Results and Discussion

Gross findings

The pulmonary lesions observed in this study included congestion, emphysema, anthracosis, pleuritis, abscess and petechial hemorrhage. Pleuritis was characterized by thick pleura. Firm nodular structures were observed in the abscesses. The lesions of anthracosis were showed with black discoloration on the lung surface. The location of lesions in the lungs is shown in Table 1. The diaphragmatic lobes were affected by all the pulmonary lesions. The congestion and emphysema were generally distributed as well.

The severity of lesions is shown in Table 2. The frequently noted pulmonary