

BOVINE TUBERCULOSIS: A HISTOPATHOLOGICAL STUDY OF THE LUNG LESIONS

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Bovine tuberculosis caused by *Mycobacterium* species is a chronic and contagious disease that results in loss of production leading to high economic losses in cattle industry. Moreover, some of the cattle *Mycobacterium* species are reported to be responsible for causing the disease in humans. Although several methods including bacterial culture and molecular techniques are available, histopathology remains a relatively rapid and reliable method for diagnosis of the disease. This paper describes the histopathological changes in the lungs of cattle affected with tuberculosis.

Lung tissue with gross lesions suggestive of tuberculosis collected from 15 cattle formed the basis of this study. Tuberculosis caused by *Mycobacterium* spp. was later confirmed using microbiology in all the animals. All the lung samples were fixed in 10% neutral buffered formol saline immediately after the collection and subsequently subjected to standard histological processing. The paraffin embedded tissue sections were cut at 4 μ and stained with haematoxylin and eosin (H&E). Some selected tissue sections were subjected to acid fast staining using the techniques viz., Modified Ziehl- Neelson's, Gabbett's and Kinyoun's. All the stained micro-sections were studied under light microscope and the histopathological changes were recorded.

All the lung samples contained well demarcated, multifocal and coalescing granulomas of variable sizes with caseous necrotic centres in the parenchyma. Four (26.66%) of the samples showed calcification of the lesions while pulmonary oedema was seen in five (33.33%) of them. Multifocal parenchymal and interstitial fibrosis of varying degree was a prominent feature of all the lungs. Infiltration of mononuclear inflammatory cells, predominately lymphocytes and macrophages of varying number outside the granulomas was another common finding of the affected lungs. The granulomas were consisted of a caseous centre and concentric layers of macrophages with epithelioid and Langhan's giant cells, lymphocytes and fibrous tissue giving a classical picture. Fourteen out of the 15 (93.33%) lungs contained acid fast stained *Mycobacterium* bacilli as demonstrated by Kinyoun's technique. However, positive percentages of Modified Ziehl-Neelson's and Gabbett's techniques were 73.33 and 80 respectively.

The present findings indicate that histopathology can be used in diagnosis of pulmonary lesions of bovine tuberculosis. Moreover, Kinyoun's acid fast staining technique is the preferred method to demonstrate *Mycobacterium* bacilli histopathologically.