

AN INCIDENTAL CASE OF COMBINED INFECTION OF TUBERCULOSIS AND PARATUBERCULOSIS IN CROSS BREED COW

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INTRODUCTION

Tuberculosis (TB) and paratuberculosis (JD) are highly infectious diseases mostly caused by *M. bovis* and *Mycobacterium avium sub sp.* respectively (Radostitis et al. 2000). Both the diseases are prevalent worldwide and cause substantial economic losses in livestock production especially in developing countries (Pollock and Neill, 2002). There are number of reports of both these diseases separately (Jones et al., 1997). Case reports of combined infection are relatively rare. The present study describes occurrence of combined case of both bovine tuberculosis and paratuberculosis in a cross breed cow.

MATERIALS AND METHODS

A cross bred cow (Holstein Friesian) of six years old was presented for necropsy at necropsy annexe, Department of Veterinary Pathology, GADVASU, Ludhiana with a history of prolonged weakness and recumbency. Depending on the gross lesions the case was suspected as combined infection of bovine tuberculosis and paratuberculosis. Impression smears from the lung and intestine were stained with Ziehl and Neelsen's staining as per standard protocols of Quinn et al. (1994). Representative tissue samples from the lung, bronchial lymph nodes, intestine and mesenteric lymph nodes were also immediately collected in 10% neutral buffered formalin. Tissue samples were processed for routine hematoxylin and eosin as well as for Ziehl and Neelsen's staining as per the standard protocol of Bancroft and Gamble (2008)

RESULTS AND DISCUSSION

The animal presented for necropsy carcass was dehydrated and emaciated with hide bound condition. The lungs were showing nodular growth with hard consistency. The mediastinal lymph nodes were also enlarged. The sectioned surface of lung showed various tubercles formed with a yellowish, dry caseous centre that was lined by a thick surrounding layer of connective tissue. The intestine was thickened with typical corrugations. The mesenteric lymph nodes were extensively enlarged.

The impression smear stained with Ziehl and Neelsen's staining showed bundles of slender acid fast rods (Photo 1) and short bulging acid fast bacteria (Photo 2) in smear obtained from lung and intestine respectively.

Microscopic evaluation of lung revealed various tubercles which distorted the architecture of normal tissue parenchyma. The centre of these tubercles revealed caseous necrosis with varying degrees of calcification and tendency of sloughing (Photo 3). A layer of inflammatory

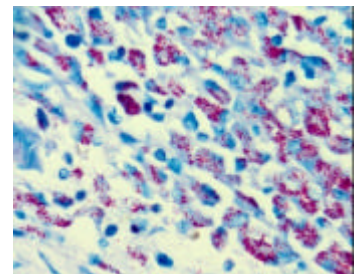


Photo 1 Intestine : Short stumpy pinkish mycobacteria. Ziehl and Neelsen. X 100.

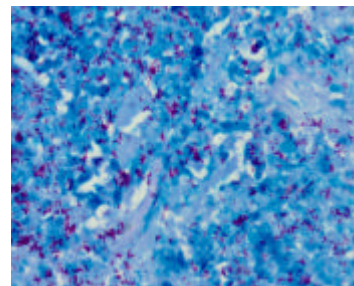


Photo 2 Lung: Slender pinkish mycobacteria. Ziehl and Neelsen. X 100.

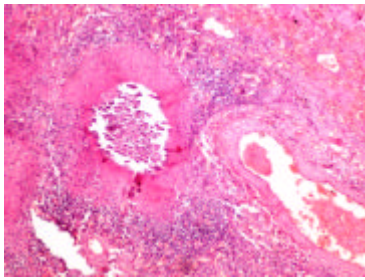


Photo 3. Lung: Central area of caseous necrosis with tendency of sloughing surrounded by rim of lymphomononuclear cells besides pneumonic changes in lung. H&E X 10.

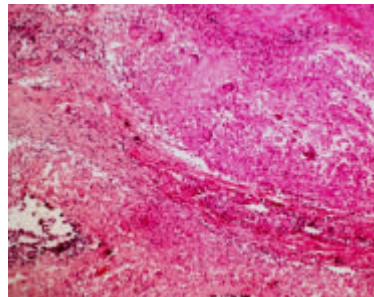


Photo 4. Lung: Langhans giant cells (Arrows) on both side of proliferated fibrous connective tissue. H& E X 10.

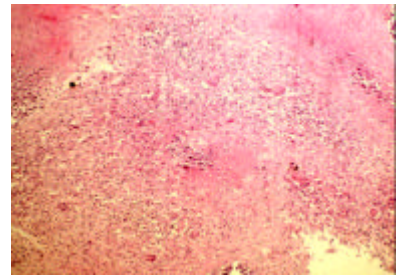


Photo 5. Intestine: Caseous necrotic area at the center surrounded by lymphomononuclear and Langhans giant cells. H&E X10.

cells consisting of lymphocytes, macrophages, epithelioid cells and Langhans giant cells, surrounded this necrotic area. These inflammatory cells were surrounded by layer of fibrous connective tissue (Photo 4). Similar histopathological findings were also reported in chronic cases of bovine tuberculosis by Radostitis *et al.* (2000). The acid fast positive bacteria were identified within these sections. The mediastinal lymph node also revealed the tuberculos granuloma.

While microscopic examination of intestine showed moderate infiltration of epithelioid cells, eosinophils lymphocytes and developing giant cells within lamina propria and sub mucosa (Photo 5). The short stumpy pinkish mycobacteria were also observed in Ziehl and Neelsen stained sections of intestine. The enlarged mesenteric lymph node was infiltrated with lymphomononuclear cells, and epithelioid cells. These findings were concurrent with the findings of Jones *et al.* (1997).

Tuberculosis and paratuberculosis are both economically important bovine diseases. Regular testing of herds for both these disease is important for the elimination of carrier animals and sustainable milk production. The present report describes the histopathological changes in the combined case of bovine tuberculosis and paratuberculosis.

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