Histopathological and immunohistochemical studies on naturally occurring paratuberculosis in goats

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Immunohistochemical and histopathological studies were carried out on spontaneously occurring paratuberculosis (Johne’s disease) in 38 goats. Among these goats, focal (grade 1), diffuse lymphocytic (grade 2), diffuse mixed (grade 3) and diffuse multibacillary (grade 4) lesions were observed in 3(7.8%), 5(13.1%), 15(39.4%), 15(39.4%) goats, respectively. The focal lesions, tiny granulomas were observed in the interfollicular areas of Peyer’s patches (PP), and the cortex of mesenteric lymph node (MLN). In diffuse lymphocytic lesions, besides the presence of granulomas in the Peyer’s patches, jejunal and ileal mucosae were diffusely infiltrated with lymphoid cells and small number of macrophages. Small multifocal granulomas were observed in the cortex and paracortex of MLN. Goats with diffuse mixed and diffuse multibacillary lesions had shown poor body conditions and thickened and corrugated intestinal mucosae on necropsy. Histologically, in diffuse mixed lesions, mucosa showed infiltration with epithelioid cells mixed with lymphocytes. Small to large multifocal granulomas containing clusters of acid-fast bacilli (AFB) were observed in the MLN. In diffuse multibacillary lesions, intestinal jejunal and ileal villi were club shaped, at times flat and fused, and diffusely infiltrated with sheets of epithelioid macrophages loaded with clusters of AFB. In indirect immunoperoxidase test (IPT), 36 (94.7%) out of 38 goats showed positive immunoreaction, the intensity of which varied with the types of lesions. On comparison, the IPT was found to have better sensitivity than Ziehl-Neelsen (ZN) staining (84.2%). One of the most important advantages of IPT was that the positive immunoreaction could be visualized even at low magnification in all grades of lesions including focal and diffuse lymphocytic type, in which AFB were scarcely detected with oil immersion objective. Based on this study, it was concluded that a spectrum of pathology existed in caprine paratuberculosis. IPT was more sensitive than ZN for demonstration of MAP bacilli/antigens.