PATHOLOGICAL OBSERVATIONS IN SINGLE INTRADERMAL (SID) JOHNIN TEST POSITIVE GOATS

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Paratuberculosis, a chronic granulo matous inflammation of intestines and associated lymph nodes of ruminants, is caused by *Mycobacterium avium* subspecies *paratuberculosis* (MAP). Clinically the only sign of *Mycobacterium paratuberculosis* infection in goats and sheep may be chronic weight loss and generalized unthriftiness. Kataria *et al.* (2004) reported that the long incubation period, lack of efficient diagnostic tests and the biology of the disease makes diagnosis challenging, especially those in early stages of infection. Early infections are manifested by a cell mediated immune response (Chiodini *et al*., 1984) and a well known CMI test for mycobacterial infection is the intradermal skin test which measures delayed type of hypersensitivity to mycobacterial antigens (Kalis *et al.,* 2003). The skin test using intradermal Johnin was said to be the best test to identify positive animals before clinical disease develops and had been widely used under field conditions (Julian, 1975). In the present study three of the eight SID positive goats were slaughtered to evaluate the pathological lesions.

One hundred and fifty goats of University Sheep and Goat farm, Mannuthy above six months of age of either sex were selected for the study. All the animals were maintained under standard feeding and good management conditions.

Johnin purified protein derivative (PPD) procured from IVRI, Izatnagar was used for the test. One square inch area in mid neck of each goat was shaved and mopped with medispirit. Skin thickness prior to injection was measured using a sliding vernier calipers and 0.1 ml of Johnin PPD was injected intrader mally. A pea sized bubble was formed at the site of injection. After 72 h skin thickness was measured and an increase in skin thickness of 4 mm or above from initial reading was taken as positive (Kalis *et al*., 2003). Three SID positive goats were selected at random, slaughtered and lesions were noted on post mortem.

Of the three animals slaughtered which were identified as positive for paratuberculosis by single intradermal Johnin test, two goats showed pathognomonic lesions of Johne's disease like corrugated intestine and edematous mesenteric lymph nodes on post mortem and the third animal had shown abundant acid fast bacilli in impression smears of lymph node by light microscopy confirming the sensitivity of single intradermal Johnin test to be hundred percent.

Paliwal *et al*. (1987) found that out of 54 cattle reactors to Johnin, only 11 (20.37 per cent) cases had gross lesions of Johne's disease. The reason for high sensitivity of Johnin test in present study might be due to the gap of 237 and 161 days from the date of SID to slaughter by which time the lesions were well developed. Roy *et al*. (2004) were also of the opinion that Johnin test was helpful in identifying the early stage of the disease.

Paliwal and Rajya (1982) and Sharma *et al.* (1998) observed that most of the lesions of Johne's disease in goats were remained confined to intestine and regional lymph nodes. The most common gross lesions were thickening of terminal small intestine, enlargement of mesenteric lymph node and corrugation of the ileal mucosa (NRC, 2003). The most common earliest recognisable gross change in goats and sheep were fleshy or velvety thickening of the intestinal mucosa (Chiodini *et al.,* 1984). In the present study also, corrugation of ileum and enlarged and edematous mesenteric lymph node were very characteristic in two of the slaughtered cases.

In one animal no acid fast organism could be detected. Reddacliff (2002) found that in paucibacillary form of disease acid fast

bacteria were rarely detected from mesenteric lymph node. Animals with paucibacillary lesions had well developed Th1 immune response and uncontrolled multiplication of MAP was prevented. Tripathi *et al*. (2006) found that most paucibacillary goats showed stronger DTH reactions as evidenced by the increase in skin thickness after 72 h of intradermal test. One of the three animals had an increase in skin thickness of 10 mm, but did not show any acid fast bacteria in lymph node impression smears. In tubercles in sheep and goats, the organism may be too few to be demonstrated except by culture.

Hence from the results, it is concluded that positive single intradermal Johnin test, is a specific and low cost field test for the early diagnosis of paratuberculosis in goats which helps to eliminate infected animals before they actually start faecal shedding.

Summary

One hundred and fifty goats were screened for paratuberculosis by single intradermal Johnin test and eight were found positive. Three SID positive goats were slaughtered and post mortem examination confirmed that two of the three slaughtered had gross lesions characteristic of Johne's disease and from the third goat acid fast bacteria could be detected from lymph node impression smear.

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