

Communication

Preliminary observations on ovine paratuberculosis (Johne's disease) in Zambia

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Dans un troupeau de moutons importés d'Afrique du Sud, une brebis est devenue partiellement anorexique et a perdu régulièrement du poids et sa bonne condition physique. Après examens clinique, coprologique et histologique, la paratuberculose (maladie de Johne) a été confirmée. Cependant, le résultat des cultures est resté douteux. Une recherche sérologique sur d'autres moutons du même troupeau et sur ceux d'une autre ferme a mis en évidence des anticorps anti-*Mycobacterium paratuberculosis* par un test de fixation du complément. L'étude suggère que la maladie est dans sa phase d'extension. C'est la première fois, en République de Zambie, qu'un cas de paratuberculose ovine est rapporté. *Mots clés* : Ovin - Paratuberculose - Histopathologie - Culture - Sérologie - Diagnostic - Zambie.

Johne's disease is a chronic enteritis of ruminants caused by *Mycobacterium johnei*. Although there are numerous reports on paratuberculosis (Johne's disease) in cattle, there is little published information of the naturally occurring disease in sheep. The disease is economically important not only as a cause of death but also due to losses which result from reduced productive capacity during the lengthy preclinical stage of the disease. Johne's disease in sheep was initially described by HOWARTH (1) in the USA and since then has been reported from Britain, Iceland, New Zealand, Germany, Spain, Italy, Yugoslavia, Israel, Iraq and India. From African continent it has been reported from South Africa (7), Egypt (2) and recently from Libya (3). The occurrence of paratuberculosis in sheep in Zambia is being reported for the first time in the present communication. In this report a natural case of paratuberculosis in a 3-year old ewe is described and brief pathogenesis, diagnosis and some serological incidence and prevalence of the disease are presented.

A three-year old Dorper ewe belonging to Galaunia Farm initially in good condition started becoming partially anorexic and gradually losing weight and

condition for about four months. Other sheep in the flock were not similarly affected. This flock was imported from South Africa about two years before. The ewe was given anthelmintic, vitamins, and antibiotics during the course of sickness but without any response. The ewe became cachectic with conspicuous bottle jaw. Faeces were soft but there was no diarrhoea. Faecal examination did not reveal any helminthic ova and blood smear examination was found negative for any blood parasite. Finally the ewe was sacrificed and at necropsy revealed superficial lymph glands specially delate submaxillary and prescapular swollen and oedematous and intermandibular space had serofibrinous oedema. The organs of the thoracic cavity were normal. In the abdominal cavity the mucous membrane of the ileum showed generalised thickening with clear transverse ridges. The mesenteric lymph glands were enlarged and oedematous. Smears made from the faecal material and ileum scrapings, heat fixed and stained with Ziehl-Neelsen's showed huge number of typical acid fast bacilli with characteristic clusture arrangement suggesting *Mycobacterium johnei*. Sections made from the ileum and lymph glands fixed in 10 percent formol saline and stained with haematoxylin and eosin and Ziehl-Neelsen showed characteristic tissue reaction as observed by RAJYA and SINGH (5) but without any caseation or calcification as reported by MARTIN (2). Typical numerous acid fast bacilli in clustures and singles were observed in mucosal epithelium and within the cytoplasm of the epithelioid macrophages in lamina propria. Mesenteric lymph node was oedematous and contained few epithelioid macrophages in their sinuses but acid fast organisms were not seen in lymph node sections.

Cultural attempt was done on Lowensteins Jensen media containing 10 percent Mycobactin and also without Mycobactin. Bacterial growth was observed after 10 weeks in slants and when smear from growth of bacteria was stained, numerous acid fast bacilli in clumps and singles were observed in both type of slants however the *Mycobacterium paratuberculosis* should not grow in media without Mycobactin. After two months sera samples were collected from 50 aged sheep of same flock, 16 sera samples gave positive reaction to the antibodies of *Mycobacterium paratuberculosis* on complement fixation test (CFT). Smears made from faecal samples of 50 sheep, 4 revealed acid fast bacteria of which three were out of 16 seropositive on CFT while 1 was out of negative samples. One hundred sera samples were collected from another sheep farm about 120 km away from the first farm having suspected history of paratuberculosis. Sheep at this farm were imported long time back from Zimbabwe. Forty-five samples gave positive reaction to CFT for antibodies of *Mycobacterium paratuberculosis* at different titre. Faecal samples collected did not reveal any clumps of acid fast bacteria.

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Clinical and pathological features of this case are similar to those reported previously for ovine paratuberculosis (5). Progressive emaciation without diarrhoea, gross thickening of the wall of ileum and colon, granulomatous enteritis and involvement of the mesenteric lymph node are described as feature of disease in sheep (1, 5, 6). The presence of numerous acid fast bacilli in the faeces, ileum scraping and within macrophages in lamina propria adds further support of ovine paratuberculosis. Cultural attempt did not confirm the bacteria but remains doubtful.

Serological evidence indicates the presence of disease and demonstrates that infection is actively spreading. Similar situation could be attributed to other farm indicating the serological presence of the disease. Absence of typical acid fast bacilli in faeces could be possibly due to preclinical sheep unable to shed the bacilli.

These observations and findings are reported to direct attention to the first occurrence of ovine paratuberculosis in Zambia. Field veterinarians and progressive farmers should be aware that diarrhoea is not a constant feature and should include this disease in their differential diagnosis when facing chronic emaciation in adult sheep. Though the disease has been reported recently in Zambia in cattle (4), it is very difficult to suggest the introduction of this disease in this country where there is no restriction on importation. Authors believe to have more work done to establish the presence and extent of disease.

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In an imported flock of sheep from South Africa, an ewe became partially anorexic and gradually losing weight and conditions. The paratuberculosis (Johne's disease) was confirmed on clinical, faecal and histopathological examination. Cultural examination remained doubtful. Serological investigation of other sheep in the flock and at other farm reacted to antibodies of *Mycobacterium paratuberculosis* on complement fixation test. The study suggests that the disease is actively spreading. This is the first report of ovine paratuberculosis in the Republic of Zambia. *Key words*: Sheep - Paratuberculosis - Histopathology - Culture - Serology - Diagnosis - Zambia.

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