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Leptospira pomona INFECTION IN WOMBATS

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Abstract: Thirteen wombats *(Vombatus ursinus)* from north-eastern Tasmania were examined for evidence of leptospiral infection. Nine animals were found to have significant serum titres to *Leptospira pomona*. These wombats also had interstitial nephritis and leptospires were detected in the renal tubules of some of these animals.

Two wombats, serologically-negative for leptospirosis, were inoculated with material known to contain *L. pomona*. A condition, more severe than the natural disease, was produced in these animals.

INTRODUCTION

In a preliminary survey of Tasmanian wildlife, Munday[4] did not obtain any evidence to suggest that the species examined were of importance in the perpetuation of leptospiral infections. However, at a later stage the same author[5] found that wombats and Norway rats *(Rattus norvegicus)* were probably significant carriers of *L. pomona* and *L. icterohaemorrhagiae* respectively.

It is the purpose of this paper to describe the natural and experimental diseases produced in wombats by *L. pomona*.

MATERIALS AND METHODS

1. Natural disease

Field staff collected heart bloods and kidneys from wombats shot in the north-east of Tasmania. The heart blood samples were tested for the presence of leptospiral antibodies by the microscopic agglutination test[6] using seven different serotypes of *Leptospira* as antigens. Attempts were made to isolate leptospires by injecting kidney homogenates into guinea pigs.[1] In addition, blocks of kidney were fixed in 10% formol-saline and routinely processed for haematoxylin and eosin staining or silver - impregnation (Levaditi's method).[3]

2. Experimental disease

Two wombats which gave negative reactions to the leptospiral microscopic agglutination test were injected with tissue homogenates known to contain viable *L. pomona*. One animal received material from a calf which died of leptospirosis and the other was injected with homogenates prepared from the tissue of the first-passage wombat. In both instances the leptospires were characterized by recovery in guinea-pigs and serological typing.[1]

RESULTS

1. Natural disease:

Material from 13 wombats was submitted from the study area. Of these, nine were found to have significant leptospiral agglutination titres (1:100 to greater than 1:10,000) against *L. pomona*. Presumed cross-agglutination occurred in one animal with a titre of 1:300 against *L. pomona* and 1:100 against *L. hardjo*, although it is possible that these reactions could have been indicative of dual infection as *L. hardjo* infections are widespread in domestic animals in Tasmania.[2] On one property where *L. pomona* infection had recently been confirmed in cattle, all seven wombats examined were found to be infected. The other six animals were each collected on different properties and

in both instances where infected wombats were detected there had been recent diagnoses of *L. pomona* infections in cattle.

Grossly the only lesions found were renal scars which varied from a few depressions in the cortex to severe scarring with associated capsular adhesions.

Microscopically there was a variable degree of interstitial nephritis and leptospires or bodies resembling degenerate leptospires were detected in the renal tubules of six of the wombats with significant titres. Unfortunately all attempts to isolate the causative organisms were unsuccessful, due to contamination which occurred during collection of the samples.

2. Experimental disease:

Both wombats died within 14 days of inoculation. The animals became depressed, anorectic and icteric. At necropsy the carcasses were jaundiced and the kidneys were swollen. Histopathological changes consisted of nephrosis in one wombat and subacute interstitial nephritis in the other. Leptospires were detected in the renal tubules of both animals, and *L. pomona* was isolated in each instance by guinea-pig inoculation. Sera from both wombats had low (1:30) titres against *L. pomona*.

DISCUSSION

There is no doubt that wombats are susceptible to infection with *L. pomona* and in some circumstances may be of importance in perpetuating the disease. Whether or not they are true reservoir hosts is not clear, because all infected animals which have been examined have come from areas where bovine leptospirosis has been previously diagnosed, and therefore they may have become infected from the cattle rather than vice versa.

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