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USE OF SENTINEL ANIMALS IN EPIDEMIOLOGICAL STUDIES OF CUTANEOUS LEISHMANIASIS

SIR,—The use of dogs as sentinel animals in epidemiological studies of cutaneous leishmaniasis was initiated in Peru about 26 years ago (HERRER, 1951). The success of this work prompted us to extend and expand this concept for similar investigations in Panama.

Over the past 3½ years we have exposed laboratory animals in areas of central and eastern Panama. Golden hamsters, *Mesocricetus auratus,* cotton rats, *Sigmodon hispidus,* and domestic dogs, *Canis familiaris,* have been used in this programme. These animals are exposed for varying periods of time, and at different heights above the ground in areas known or suspected to be endemic for zoötic cutaneous leishmaniasis. Sentinels which survive the field exposure are returned to the laboratory for observation. Skin cultures from bare areas of the sentinel animals are made about two months after their return to the laboratory, and periodically thereafter. Cultures are made without deference to symptomatic indications of the infection, as our experience has shown that a significant number of naturally infected wild animals show no gross skin alterations or other outward manifestations of leishmaniasis. Skin material is obtained either by biopsy, according to the biopsy-culture technique (HERRER et al., 1966), or by aspiration after piercing the skin with a capillary glass pipette. In addition, a proportional number of exposed animals with negative skin cultures are subsequently challenged with strains of *Leishmania* of known virulence. Cultures are also made from the viscera of all exposed animals at autopsy.

To date, 5 dogs, 148 hamsters and 103 cotton rats have been used. 2 of these animals developed leishmaniasis as a result of their exposure in the forest. The first positive sentinel was a hamster which had been exposed for 28 days at a height of 5 feet above the ground in the locality of Sasardi, San Blas Territory in eastern Panama. The strain of *Leishmania* contracted by this sentinel proved to be identical to the *L. mexicana*-like strains isolated from several forest mammals in the same area (HERRER et al., in press). The second positive sentinel was a dog which had been exposed for about 90 days at 23 feet above the ground, beneath the canopy of a tree, in the vicinity of Achiote, Colon Province in central Panama. Subsequent study of this isolate showed that it was indistinguishable from *L. braziliensis s. l.,* the only form of *Leishmania* so far isolated from humans in Panama.

Both positive sentinel animals showed conspicuous skin alterations. An obvious swelling was apparent in both hind feet of the hamster, from which *Leishmania* was isolated. In the case of the positive sentinel dog, the parasite was isolated from a slight depigmentation of the skin on its nose (Figure).

Dog used as sentinel in the Achiote area, central Panama. After about 3 months of exposure *Leishmania braziliensis* was isolated from a slight depigmented area of the skin of the left nostril. The picture shows the animal 9 months after its return to the laboratory.

Concomitant entomological studies on the bionomics of phlebotomine sandflies in each of the study areas are providing information on the vector aspects of cutaneous leishmaniasis. So far, ecological and behavioural data concerning the more than 30,000 sandflies collected during this study are being evaluated. *Lutzomyia olmeca,* a rodentophilic sandfly, was incriminated as the principal vector in an enzoötic focus of leishmaniasis in Sasardi (CHRISTENSEN et al., in press). Vectorial aspects of sandflies in central Panama will be considered in a forthcoming detailed report on epidemiological patterns of cutaneous leishmaniasis.

We are, etc.,

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