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Reprinted from THE AMERICAN JOURNAL OF TROPICAL MEDICINE AND HYGIENE  
Vol. 25, No. 1, January 1976  
p. 54-58

*Printed in United States of America*

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## EPIDEMIOLOGICAL PATTERNS OF CUTANEOUS LEISHMANIASIS IN PANAMA

### III. ENDEMIC PERSISTENCE OF THE DISEASE

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**Abstract.** Endemic persistence of cutaneous leishmaniasis is described in El Aguacate, a community established in the forest of central Panama about 75 years ago. Physiographic peculiarities partially isolate El Aguacate from other villages in the region. Some of the original forest environment has been preserved and man-biting species of phlebotomine sandflies were abundant as was the two-toed sloth, *Choloepus hoffmanni*, the principal reservoir host of *Leishmania braziliensis* in Panama. The inhabitants, as well as their dogs, were examined for natural leishmaniasis in 1969 and 1973. Mammals and phlebotomine sandflies were collected from 1968 to 1973 in a search for reservoir hosts and potential vectors of the disease. Similar studies were undertaken in two nearby villages during 1965 and 1969. *L. braziliensis* has persisted for many years in El Aguacate, and infection is acquired during childhood. Dogs also were found naturally infected, and the two-toed sloth showed yearly infection rates up to 47.8%. Parasites were demonstrated from a night monkey, *Aotus trivirgatus*.

An outbreak of cutaneous leishmaniasis among people of a small settlement, as discussed in a previous paper,<sup>1</sup> is the most common epidemiological pattern of the disease in Panama. A second epidemiological pattern is characterized by the incidental or sporadic appearance of the infection among humans and dogs that periodically enter forested areas.<sup>2</sup> The involvement of persons of any age and either sex, as well as the rapid disappearance of the disease from the settlement, have been considered as principal characteristics of the first pattern, and the acquisition of the disease almost exclusively by male adults in the second.

Rarely, epidemiological patterns of cutaneous leishmaniasis differ significantly from the two types mentioned above. One such exception, however, is characterized by the persistence of the infection within a community for long periods of time, and the occurrence of the disease mainly among children. We had the opportunity of observing such a pattern of cutaneous leishmaniasis in a community established in central Panama many years ago, and this paper reports the results of our studies.

#### MATERIALS AND METHODS

##### *The study area*

The community of El Aguacate is located in the foothills of Trinidad Mountain, about 45 airline kilometers west of Panama City. Human dwellings are scattered throughout the small El Aguacate valley from the base of Trinidad Mountain, north to the Trinidad river. At one end of the El Aguacate valley there is a creek which becomes a torrential river during the rainy season. Due to this particular topography El Aguacate has remained somewhat isolated from other nearby villages in the region.

According to the local people the first settlers established the community at least 75 years ago. All were relatives of a few families. From the beginning their fundamental occupation has been self-subsistence agriculture, which has been carried out with only partial destruction of the forest. Moreover, they have planted fruit trees, mainly citrus as well as coffee plants, which have helped to preserve the forest environment (Fig. 1). These conditions supported the presence of many species of forest mammals and a large population of phlebotomine sandflies.

Construction of houses is similar to those found in most of the small communities established in

