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Longitudinal Sero-epidemiologic Studies on Malaria in the Mato Grosso Area of Brazil

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In April of 1970 studies were initiated in two sectors of the State of Mato Grosso, Brazil, to determine the levels of malarial endemicity in this region and to demonstrate the usefulness of serological methods, combined with parasitological findings, in the definition of these levels. Locality records previously compiled from sporadic active and passive case detection procedures indicated moderately high case rates and were suggestive of at least high seasonal transmission in some areas. The two sectors were Campo Grande, located in the southern portion of the State and Cuiabá located to the North and extending to the edge of the Amazonas watershed. Although there is some overlapping, the two sectors in general are quite different in climate, topography and other physical characteristics.

Blood films and samples for serology were collected on three occasions from the Cuiabá sector and once from the Campo Grande sector. Dual samples were collected for serological testing, one to be processed by the indirect fluorescent antibody method (IFA) and one by the indirect hemagglutination method (IHA). In the multiple sampling in Cuiabá, the same localities were sampled each time, ensuring comparability of populations.

The first sampling in the Campo Grande sector in April 1970, along with the blood film results, showed this region to be one of very low endemicity. Only 0.83% of the 602 samples examined were parasite positive; 8.0% were positive for IFA and/or IHA antibodies. In the Cuiabá sector the parasite index was also low, only 0.71% of 957 individuals being positive. However, 19.7% were sero-positive with the IFA and/or IHA antibodies. It was of interest that in the Cuiabá sector all of the parasite positives were *P. vivax* (one was mixed with *P. falciparum*) while in the IFA test maximum titers to *P. falciparum* were seen four times as often as to *P. vivax*. Because of the difficulties in covering the large area and the apparent low number of sero-positives, the Campo Grande sector was not resurveyed.

The second and third surveys of the Cuiabá sector suggested some significant trends. In the second (October 1970), 1.3 percent of 776 blood films were positive, and there was almost a complete shift from *P. vivax* to *P. falciparum*. The serological tests showed an increase in positives, but there was little or no shift in maximum titers from the earlier survey. In the third survey (February 1971) there was a slight increase in parasite positives (2.3%) and in the sero-positives. The *P. falciparum* - *P. vivax* ratio seemed to be again reversing, with a slight predominance of *P. vivax* parasite positives. The predominance of *P. falciparum* sero-positives remained essentially unchanged. Surveillance data collected during the period of study through passive and active case detection methods support the survey data and confirm the conclusions which can be reached on the patterns of endemicity and transmission characteristics for this area.

(To be presented at the Annual Meeting of the American Society of Tropical Medicine and Hygiene, December 1970).