

INTESTINAL PARASITES IN IAUALAPITI INDIANS FROM XINGU PARK, MATO GROSSO, BRAZIL

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Brine flotation and gravity sedimentation coproscopical examinations were performed in stool samples from 69 of the 147 Iaualapiti Indians of the Xingu Park, Mato Grosso State, Brazil. Intestinal parasites were present in 89.9% of the population examined. High rates of prevalence were found for some parasite species: Ancylostomidae, 82.6%; Enterobius vermicularis, 26.1%; Ascaris lumbricoides, 20.3%; and Entamoeba coli, 68.1%. Infection by Trichuris trichiura, Schistosoma mansoni, Taenia spp. and Hymenolepis nana was not detected. Helminth's prevalence in children aged one year or less was comparatively low (33.3%). Quantitative coproscopy was done in positive samples for Ascaris and Ancylostomidae and the results expressed in eggs per gram of feces (EPG). Quantitative results revealed that worm burdens are very low and overdispersed in this Indian tribe, a previously unreported fact.

Key words: Brazilian Indians – enteroparasitoses – Epidemiology – quantitative coproscopy

Epidemiological information about intestinal parasites of Brazilian Indians is scant (Confalonieri et al., 1989). This also applies to the population of the Xingu Indian Park (Parque Indígena do Xingu, PIX), an Indian reserve established in 1961 by the Brazilian Government to prevent uncontrolled and predatory colonization of Indian territory. Presently, PIX shelters 2,740 Indians grouped in 17 tribes randomly dispersed through the area. The only data available on intestinal parasites of PIX populations are those of Kameyama (1985), from a parasitological survey initiated in the seventies. The present report concerns the prevalence of intestinal parasites in the ancient Iaualapiti tribe, already settled in southern Xingu when Karl von Steinen led the first scientific expedition to the area in 1884.

MATERIALS AND METHODS

Area and population of study – PIX is an Indian reserve situated in the northern segment of Mato Grosso State (10°S and 13°S; 53°W and 54°W), corresponding to a 22,000 km² transition area between the Central Brazilian

Savanna (Cerrado Central) and the Amazonian forest. Its climate is of the tropical humid type with well defined dry periods. The Iaualapiti tribe inhabits the southern part of PIX, and is constituted by 147 individuals who live on natural resources assisted by FUNAI (Fundação Nacional do Índio).

Collecting and processing – Stool samples from 69 individuals were collected during 1987 (July – August) in polypropylene bags containing merthiolate-formalin (MF) preservative. Concentration of parasites was done by Willis' brine flotation and by Hoffman, Pons & Janer's gravity sedimentation method (Beaver et al., 1984). For quantitative analysis, known volumes of feces were utilized and dilution factors calculated for sample examination in counting chambers 22 by 22 mm wide and 0.17 mm high (Fernandes et al., 1975). For estimating the number of eggs per gram of feces (EPG) it was assumed that all eggs of the samples had sedimented after one hour.

RESULTS AND DISCUSSION

Total numbers of parasitized individuals and rates of infection among the 69 Iaualapiti examined are presented in Table I. Overall

infection rates for any kind of parasite were 89.9%. The high prevalence for Ancylostomidae and *Ascaris* agrees with the data of Kameyama (1985) for Xingu Indians. The absence of *Taenia* spp., *Schistosoma mansoni*, *Hymenolepis nana* and *Trichuris trichiura* among Iaualapiti also coincides with Kameyama's observations but are in contrast with data of Fagundes Neto (1977) who reported a 5% prevalence rate of *T. trichiura* in children of the same PIX area, although from a different tribe. The prevalence of *Enterobius vermicularis* here reported is certainly underestimated since anal swabs were not done. The high prevalence of intestinal Protozoa, markedly *Entamoeba coli*, suggests fecal contamination of household environment.

TABLE I

Prevalence of intestinal parasites in Iaualapiti Indians

Parasite	Positive	Prevalence
Ancylostomidae	57	82.6
<i>Ascaris lumbricoides</i>	14	20.3
<i>Enterobius vermicularis</i>	18	26.1
<i>Hymenolepis nana</i>	0	0.0
<i>Schistosoma mansoni</i>	0	0.0
<i>Taenia</i> spp.	0	0.0
<i>Trichuris trichiura</i>	0	0.0
<i>Entamoeba coli</i>	47	68.1
<i>Giardia intestinalis</i>	3	4.3
<i>Endolimax nana</i>	2	2.9
<i>Iodamoeba bütschlii</i>	1	1.4
none	7	—

Total sample, 69 individuals.

TABLE II

Infection by at least one helminth species, related to age group

Age group (yrs)	Positive	Prevalence
≤ 1	6	33.3
2-5	12	83.3
6-10	12	100.0
11-20	16	93.7
≥ 21	23	91.7
all groups	62	89.9

Total sample, 69 individuals.

Concerning age groups (Table II), children aged between 6 and 10 years presented the highest prevalence of helminthic infection, although from 11 years up all groups presented infection rates above 90%. In contrast, infection of children aged 1 year or less was relatively low (33.3%). This may be explained by the Iaualapiti custom of protracted breast-feeding and of mothers carrying their babies on their laps most of the time.

Quantitative coproscopy revealed that the individual worm burdens estimated from EPG are somewhat low among Iaualapiti. Mean EPG of 57 individuals positive for Ancylostomidae was 312.7 whereas for 14 Indians positive for *A. lumbricoides* it was 899.7. The highest individual EPG values were 3,182 for *A. lumbricoides* and 2,111 for Ancylostomidae. According to Beaver et al. (1984) these figures are low. Distribution of EPG in the population is overdispersed: feces of only 5 individuals out of 69 accounted for 71% of the total of *Ascaris* eggs eliminated in the sample examined. Corresponding data for Ancylostomidae were 73% for 12 individuals. Overdispersion, although yet unreported for Brazilian Indians, agrees with what seems to be a general rule for helminthic infections (Crofton, 1971).

REFERENCES

- BEAVER, P. C.; JUNG, R. C. & CUPP, E. W., 1984. *Clinical Parasitology*, 9th Ed., Lea & Febiger, Philadelphia.
- CONFALONIERI, U. E.; ARAÚJO, A. J. & FERREIRA, L. F., 1989. Enteroparasitos em índios yanomami. *Mem. Inst. Oswaldo Cruz*, 84, Supl. IV, 111-113.
- CROFTON, D. H., 1971. A quantitative approach to parasitism. *Parasitology*, 62: 179-193.
- FAGUNDES NETO, U., 1977. *Análise do estado nutricional das crianças índias do Alto Xingu*. Thesis, Escola Paulista de Medicina, 163 p.
- FERNANDES, M. P. M.; CHIUCHETTA, M. S.; LEONART, M. S. S.; SILVA, M. V.; DRUMMOND, A. F. F. & FERREIRA, C. S., 1975. Contagem de ovos de helmintos em câmaras sem retículo. *Rev. Bras. Anal. Clin.*, 7: 17-20.
- KAMEYAMA, I., 1985. *Parasitoses intestinais entre os índios do Parque Nacional do Xingu: alguns aspectos ecológicos e epidemiológicos*. Thesis. Faculdade de Saúde Pública, Universidade de São Paulo, 107 p.