Rev. Inst. Med. trop. São Paulo
37 (2): 145-148, março/abril, 1995.

INTESTINAL PARASITISM IN THE XAVÁNTE INDIANS, CENTRAL BRAZIL

Ricardo V. SANTOS (1, 2), Carlos E.A. COIMBRA Jr. (1), Nancy M. FLOWERS (3) & Joaquim P. SILVA (1)

SUMMARY

This paper reports the findings of a survey for intestinal parasites among the Xavánte Indians from Central Brazil. *A. lumbricoides* (25.0%) and hookworms (33.6%) were the two most common helminths; *E. histolytica* complex (7.8%) and *G. lamblia* (8.6%) the most common protozoans. The majority (58.5%) of positive individuals hosted only one species of helminth. Egg counts for helminths, and for *A. lumbricoides* in particular, were found to be not dispersed at random, with a few individuals, all of whom young children, showing very high counts. The prevalence rates of intestinal parasites for the Xavánte are below those reported for other Amerindian populations from Brazil.

KEYWORDS: . Helminths; Intestinal parasites; Amerindians; Brazil.

INTRODUCTION

The biomedical literature on lowland South American Amerindians indicates that the prevalence rates of intestinal parasites in these populations tend to be moderate to high, with *Ascaris lumbricoides*, *Trichuris trichiura* and hookworms (Ancylostomidae) being the most commonly observed helminths (SALZANO & CALLEGARI-JACQUES, 1988).

This study is part of a larger research project which aims at characterizing the impacts of socio-economic changes upon the health and human biology of native Amazonian peoples. The aim of this paper is to report on the results of a survey for intestinal parasites carried out among the Xavánte Indians of Central Brazil.

POPULATION AND METHODS

The Xavánte population is distributed over several reservations in the state of Mato Grosso, Central Brazil. The group studied numbered 461 individuals in June 1990, living in a single village on the Pimentel Barbosa Reservation (52° W, 13° S). The village was composed of 32 houses built in the traditional style; these are large beehive-shaped dirt floor constructions thatched to the ground with palm leaves. Particularly in the past two decades, the interactions between the Xavánte from Pimentel Barbosa and the Brazilian national society have intensified (FLOWERS, 1983, GROSS et al., 1979).

The study was carried out in June 1990 (dry

(1) Escola Nacional de Saúde Pública, Fundação Oswaldo Cruz, Rua Leopoldo Bulhões 1480, 21041-210 Rio de Janeiro, RJ, Brazil.
(2) Departamento de Antropologia, Museu Nacional, Quinta da Boa Vista s/n, 20940-040 Rio de Janeiro, RJ, Brazil.
(3) Department of Anthropology, Hunter College - CUNY, 695 Park Avenue, New York, NY, 10021. U.S.A.
Correspondence to: Dr. Ricardo V. Santos, Escola Nacional de Saúde Pública, Fundação Oswaldo Cruz. Rua Leopoldo Bulhões 1480, 21041-210 Rio de Janeiro, RJ, Brazil, fax: +55-21-2580327

season). Screw-topped containers were distributed to all villagers. A total of 128 faecal samples were actually collected and subsequently preserved in 10% formalin. The samples were examined by the spontaneous sedimentation method (LUTZ, 1919). Faecal egg counts were performed according to Barbosa (BARBOSA, 1969). Anti-helminthic treatment with mebendazole was provided to the whole popu-lation through the local FUNAI (Brazilian National Indian Foundation) health service.

RESULTS

Table 1 summarizes the findings of the parasitological survey. *A. lumbricoides* (25.0%) and hookworms (33.6%) were the two most common helminths in the Xavánte population. Among the protozoans, *E. histolytica* complex and *G. lamblia* were found in, respectively, 7.8% and 8.6% of the samples. Males presented slightly higher rates of parasitism for helminths than females; for protozoans, the inverse trend was observed - prevalences for females were slightly higher. Chi-square tests and Fischer's exact tests did not show statistically significant differences between sexes in prevalence rates for specific helminths and protozoans.

There is a well-defined age trend in levels of parasitism by helminths, in particular for those which occur in higher prevalences. Rates are the highest in young individuals (< 20 years), and especially in those 5-10 years of age, dropping in the older age cohorts.

With regard to helminth poliparasitism, the majority (58.5%) of individuals had only one parasite; 26.2% had two parasites; 9.3% had three parasites; and only 6.2% had four parasites. No significant difference in levels of poliparasitism between sexes was observed (x^2=3.02; p=0.56). Frequencies of poliparasitism were highest in children 5 to 10 years of age.

Table 2 shows the results of egg counts for hookworms and *A. lumbricoides*. For hookworms, there is little variation in the mean number of eggs in different age groups. In the case of *A. lumbricoides*, when one considers the totality of positive individuals, there is a sharp variation in the mean number of eggs. Three individuals showed exceptionally high egg counts: one 10 year-old girl (524 eggs/g); one 8 year-old boy (540 eggs/g); and one 5 year-old girl (1,440 eggs/g). All remaining individuals positive for *A. lumbricoides* presented mean number of eggs lower than 200. When the three heavily loaded ("wormy") individuals are excluded from the computation of the mean number of eggs by age, means and standard deviations greatly decrease for two of the age groups.

DISCUSSION

In the early 1960s the Xavánte were intensively investigated as part of an interdisciplinary biomedical

TABLE 1

Prevalence rates (%) of helminths and protozoans in the Xavánte Indians from Pimentel Barbosa, Brazil, according to age groups and sex.

Age groups (yrs)	n	Species of helminths and protozoans											
		Al	Anc	Tt	Ev	Ss	Hn	Cap	Eh	Ec	Gl	En	Ib
0 - 5	28	21.4	39.3	3.6	-	14.3	3.6	3.6	7.1	21.4	14.3	-	-
5 - 10	33	45.5	48.5	-	6.1	21.2	12.1	-	9.1	33.3	9.1	-	-
10 - 20	26	26.9	46.2	-	19.2	7.7	3.8	-	3.8	38.5	7.7	3.8	11.5
20 - 40	26	15.4	7.7	-	-	3.8	7.7	3.8	11.5	38.5	3.8	-	-
> 40	15	-	13.3	-	-	6.7	-	6.7	6.7	80.0	6.7	-	6.7
Total	**128**	**25.0**	**33.6**	**0.8**	**5.5**	**11.7**	**6.3**	**2.3**	**7.8**	**38.3**	**8.6**	**0.8**	**3.1**
Males	48	29.2	37.5	2.1	8.3	14.6	8.3	-	6.3	37.5	8.3	-	4.2
Females	80	22.5	31.3	-	3.8	10.0	5.0	3.8	8.8	38.8	8.8	1.3	2.5

Al: *Ascaris lumbricoides;* Hk: hookworms; Tt: *Trichuris trichiura*; Ev: *Enterobius vermicularis*; Ss: *Strongyloides stercoralis*; Hn: *Hymenolepis nana*; Cap: *Capillaria* sp.; Eh: *Entamoeba histolytica* complex; Ec: *Entamoeba coli*; Gl: *Giardia lamblia*; En: *Endolimax nana*; Ib: *Iodamoeba bütschlii*

TABLE 2

Egg counts (per gram of faeces) of hookworms and *A. lumbricoides*, according to age groups.

age groups (years)	Hookworms	*A. lumbricoides* ("wormy" subjects included)*	*A. lumbricoides* ("wormy" subjects excluded)
0 - 5	n=11**	n=6	n=6
	3.91	20.00	20.00
	(1.97)	(21.42)	(21.42)
5 - 10	n=16	n=15	n=13
	7.69	74.33	37.31
	(4.94)	(104.68)	(36.16)
10 - 20	n=12	n=7	n=6
	6.75	51.57	16.50
	(4.24)	(93.14)	(8.87)
20 - 40	n=2	n=4	n=4
	5.50	6.75	6.75
	(0.71)	(5.12)	(5.12)
> 40	n=2		
	6.60	—	—
	(2.83)		

* "wormy" subjects are those with more than 200 eggs per gram of faeces.
** sample size, mean and standard deviation.

and human biological research project (NEEL et al., 1964, 1968). With regard to intestinal parasites, a cross-sectional survey carried out at the village of Simões Lopes pointed to high rates of infection, particularly for *A. lumbricoides* (70%) and hookworms (97%) (NEEL et al., 1968). The present results from the village of Pimentel Barbosa point to rates of infection below those previously reported for the Xavánte. The same may be said in relation to the studies carried out in other tribes from Central Brazil which, overall, have revealed considerably higher prevalence rates than those reported for the Pimentel Barbosa Xavánte (BARUZZI et al., 1977, KAMEYAMA, 1985).

Two findings are particularly noteworthy. *S. stercoralis* was observed in 11.7% of the sample, despite the use of a non-specific method for its diagnosis. This aspect suggests that this helminth is possibly even more common than herein reported. With regard to *Capillaria* sp., different authors have reported on the finding of eggs of this helminth in various Amerindian groups (COIMBRA & MELLO, 1981, CONFALONIERI et al., 1991). *Capillaria* eggs in the stools does not necessarily indicate actual parasitism, but rather their passage through the digestive tract resulting from the ingestion of liver of infected game animals (COIMBRA Jr., 1982, COIMBRA & MELLO, 1981).

Generally speaking, the sanitary conditions at Pimentel Barbosa are precarious, favouring the maintainance of intestinal pathogens in the community at endemic levels. For instance, the village has remained at the same site for over twenty years, which is possibly associated with increased environmental contamination with infective stages of helminths and protozoans. People defecate in the fields about 50 meters away from the village. Water is drawn from a stream about 100 meters from the houses and the village site is somewhat higher than the stream, so there is a possibility of water contamination, particularly when it rains. People, and children in particular, normally go barefoot.

At present we do not have enough information to explain why the Xavánte from Pimentel Barbosa present a lower rate of infection compared to other Central Brazilian Indian groups. It is possible that a number of factors account for this, including occasional treatments provided by FUNAI. It should be noted that there were no records at the local FUNAI office of mass anti-helminthic treatment having been given in recent years.

This is one of the few studies which attempts to estimate parasite load in Amazonian Amerindians. Egg counts for helminths, and for *A. lumbricoides* in particular, were found to be not dispersed at random, with a few individuals, all of whom young children, showing very high counts. A similar pattern of distribution has been extensively observed in other populations and might reflect not only enhanced biological predisposition but also a combination of other factors such as behaviour, social status, and housing, among others (HASWELL-ELKINS et al., 1989, KEYMER & PAGEL, 1990). Due to their role in the spread of parasites, the adequate treatment of "wormy" individuals may assume paramount importance in attempting to control intestinal parasitism in a given community.

ACKNOWLEDGMENTS

Funding was provided by the Wenner-Gren Foundation and the MacArthur Foundation. We also

wish to thank the Brazilian National Indian Foundation and the Xavánte for their support.

RESUMO

Parasitas intestinais entre índios Xavánte, Brasil Central

Este trabalho reporta os resultados de um inquérito transversal qualitativo e quantitativo sobre parasitas intestinais entre os Xavánte do Brasil Central. *A. lumbricoides* (25%) e ancilostomídeos (33,6%) foram os helmintos mais freqüentes; complexo *E. histolytica* (7,8%) e *G. lamblia* (8,6%) os protozoários mais comuns. A maioria dos indivíduos positivos albergava somente uma espécie de helminto (58,5%). Os resultados dos exames quantitativos indicaram que alguns poucos indivíduos, todos eles crianças, apresentavam concentrações particularmente elevadas de ovos de helmintos, particularmente no caso de *A. lumbricoides*. As prevalências de positividade dos Xavánte são inferiores àquelas reportadas para outros grupos indígenas do Brasil.

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Recebido para publicação em 25/08/1994
Aceito para publicação em 24/11/1994