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EPIDEMIOLOGICAL ASPECTS OF LEPROSY IN A CITY OF LEGAL AMAZON, BRAZIL

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ABSTRACT
Leprosy is yet an important infectious disease in Brazil. The objective of this study was to determine the frequency of leprosy in a countryside city from Legal Amazon region. Consolidated data were obtained through the National Information System on Diseases of Compulsory Declaration (SINAN). The result showed there was a high prevalence of Hansen's disease, especially among female gender, and afro-brazilian descendents, with predominance of Dimorphous and Virchowian clinical forms. Due to late diagnosis and higher frequency of treatment abandonment leprosy is a serious public health problem among people of this little city.

KEY-WORDS: Leprosy, Clinical Forms, Amazon

INTRODUCTION

In 2010, 192246 cases of leprosy were reported world-wide[1]. India is responsible for 64% of new leprosy cases, followed by Brazil, Indonesia, Democratic Republic of Congo, Ethiopia, Nigeria, Bangladesh, Nepal, Myanmar and Sudan[1,2].

The 2005's goal of leprosy elimination was not performed by six countries only, including Brazil[3]. Leprosy induces foot deformities and amputation of toes which have been associated with decreased walking capacity; and it has been estimated that two million people worldwide are disabled due to leprosy[4,5]. From 210 patients enrolled for treatment in a leprosy reference center in rural Ehiopia, 61.5% had developed some type of disability[6]. We report here the epidemiologic profile of leprosy amongst an urban population of a countryside city from Legal Amazon, Brazil.

METHODOLOGY

This was an epidemiologic study covering leprosy epidemiological data from 2007 to 2011 in Barra do Garças municipality (15° 53′ 24″ S, 52° 15′ 24″ W), Mato Grosso State, Legal Amazon, Brazil. Nowadays, Barra do Garças has a population of 57,235 citizens. Data were obtained by using the National Information System on Diseases of Compulsory Declaration (SINAN) in the regional reference office of the city. According to current recommendations of the Brazilian Ministry of Health we collected data and estimated the detection coefficient among those under 15 years-old; the leprosy clinical forms according to Madrid's classification in indeterminate (i), tuberculoid (t), wirchownian (w), and dimorphous (d) leprosy. All patients signed the free and informed consent form and the study received approval by the Ethics Committee on Research of the Julio Müller University Hospital (protocol 987/CEP-HUJM/2011). Epiinfo® 3.5.3. was used for statistical analysis. The chi-square test was used to verify possible differences among the results, with a significance level of $p<0.05$.

RESULTS

During the covered period, 364 leprosy cases were registered with predominance of male gender (56.59%). Other social aspects of leprosy cases were presented in Table 1. Considering ethnicity, leprosy cases were more frequent among African-Brazilian descendents (Black and Mulatto) (54.4%), and white/Caucasian (42.8%) than other ethnic groups (Table 1).

TABLE 1. Frequency of leprosy according to gender, ethnicity and age in Barra do Garças, MT, Brazil, 2007-2011.

Year		2007	2008	2009	2010	2011	Total
Gender	Male	63	46	28	32	37	206
	Female	37	42	27	14	38	158
	Total	100	88	55	46	75	364
Ethnicity	Non-declared	1	0	3	0	0	4
	Caucasian-white	48	46	23	15	24	156
	Black	10	7	7	3	10	37
	Asiatic	3	1	0	1	0	5
	Mulatto	38	34	22	27	40	161
	Indigenous	0	0	0	0	1	1
	Total	100	88	55	46	75	364
Age (years)	1 to 4	0	0	0	0	1	1
	5 to 9	3	3	0	0	0	6
	10 to 14	4	5	0	1	6	16
	15 to 19	9	4	4	1	3	21
	20 to 29	13	14	11	10	5	53
	30 to 39	16	11	7	11	19	62
	40 to 49	17	21	10	9	13	70
	50 to 59	10	15	14	6	12	57
	60 to 69	19	10	6	4	10	49
	70 to 79	9	4	2	3	4	22
	80 and +	0	1	1	1	2	5
	Total	100	88	55	46	75	364

Considering the leprosy clinical forms Dimorphous (60.71%) and Virchowian (13.46%) patterns were predominant during all period (Table 2).

TABLE 2. Frequency of Clinical Forms of Leprosy in Barra do Garças, MT, 2007-2011.

Clinical forms	2007 n (%)	2008 n (%)	2009 n (%)	2010 n (%)	2011 n (%)	Total n (%)
Ignored	18(18)	1 (1.14)	2 (3.63)	2 (4.35)	10 (13.33)	33(9.06)
Indeterminate	9(9)	4 (4.54)	3 (5.45)	2 (4.35)	4 (5.33)	22(6.04)
Tuberculoid	9(9)	11 (12.5)	3 (5.45)	4 (8.69)	2 (2.66)	29(7.97)
Dimorphous	55(55)	63 (71.6)	36 (65.45)	25 (54.35)	42 (56)	221(60.71)
Virchowian	7(7)	7 (7.95)	11 (20)	10 (21.74)	14 (18.66)	49(13.46)
Non-classifyied	2(2)	2 (2.27)	0 (0)	3 (6.52)	3 (4.02)	10(2.76)
Total	100	88	55	46	75	364

The prevalence of leprosy was represented in Table 3.

TABLE 3. Prevalence of leprosy in Barra do Garças, MT, Brazil, 2007-2011

Variable/year	2007	2008	2009	2010	2011
Population	53,243	54,882	55,120	56,560	56,903
Cases	100	88	55	46	75
Prevalence (*per* 1.000)	1.878	1.603	0.998	0.813	1.318

DISCUSSION

Beyond the physical impairments, leprosy also causes social discrimination due to the very foreseeable and transmissible skin lesions[7,8]. The Indeterminate form is the initial clinical manifestation of Hansen's disease that could progress to either spontaneous cure or to other polarized clinical forms[9]. In the present study the percent of indeterminate form was very lower than the polarized forms suggesting that the clinical diagnosis has been realized later. In a study covering leprosy cases from 2000 to 2006 in Uberaba, Southern Brazil, it was reported 9 cases of leprosy in children of which six were dimorphous; and those authors concluded leprosy diagnosis was very late in children[10]. Studying ten year period of leprosy cases among children and adolescents in Barra do Garças, MT, Brazil, Santos et al.[11] showed that dimorphous leprosy accounted by 53.2% of cases which constituted a serious public health problem since this form is multibacillary with a high bacillary load. Notwithstanding this clinical form usually affect eyeball, larynges, spleen, liver, adrenal glands, lymph nodes, peripheral vascular system, testis, and peripheral nerves[12,13]. Those authors also confirmed that their city should be considered hyperendemic since the multibacillary leprosy in children was very higher than other Brazilian localities such as Piaui[14].

A study in Guarulhos, a Metropolitan city of Sao Paulo (Brazil), dimorphous (31.9%) and virchowian (31.9%)

were the major leprosy clinical forms[15]. This result diverges from the present data.

Indeterminate (31.3%) and dimorphous (27.5%) types were the main forms in Primavera do Leste, a city near 272 Km from our studied city[16]. Considering age and gender the present study is in accordance to other Brazilian studies conducted in Guarulhos (SP) and Uberaba (MG), Brazil[10,15]. Leprosy affected people in actively economic age which is in accordance with many previous studies[17]. In Barra do Garças (MT) leprosy affected more afro-brazilian people which is in accordance with a previous study in Primavera do Leste[16]. However in Uberaba and Guarulhos leprosy predominated among Caucasian people[10,15].In fact, the micro-region of "Medio Araguaia", on which Barra do Garças is located, is considered the 8th highest leprosy endemic area with both ancient and newer leprosy focus[18]. Among Legal Amazon states, Mato Grosso has a higher prevalence and incidence of leprosy which has been associated to recent population migratory flows, poverty, poor living conditions, alcohol abuse, abandonment of treatment, and lack of disease knowledge[18,19].

Prevalence of leprosy in Barra do Garças during five years declined from 1.878/1.000 hab to 0.813/1.000 hab which agreed with a previous study[11]. Furthermore, prevalence of leprosy in Barra do Garças during 2007 to 2009 was higher (61%, 32.6%, and 8.9%, respectively) than that found in Primavera do Leste study.

CONCLUSION

In Barra do Garças (MT), Legal Amazon, leprosy is still a public health problem which deserves more attention of the health and social authorities concerning earlier diagnosis and more effective treatment as recommended by the WHO.

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