ARTIGO ORIGINAL

SEROPREVALENCE OF RAPID TESTS IN LEPROSY CASES AND HOUSEHOLD CONTACTS IN ENDEMIC MUNICIPALITIES OF PARÁ STATE[1]

SOROPREVALÊNCIA DE TESTES RÁPIDOS EM CASOS DE HANSENÍASE E CONTATOS INTRADOMICILIARES EM MUNICÍPIOS ENDÊMICOS DO ESTADO DO PARÁ

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SUMMARY

Objective: this is a transversal study of series of cases in endemic areas for leprosy in the Sate of Pará, estimating the seroprevalence of antiPGL-1, through ML-Flow rapid test in leprosy cases and their household contacts. **Method:** from april 2011 to october 2012, 73 new leprosy cases and 165 household contacts were recruited in the reference units for treatment of leprosy in the municipalities of Marituba, Belém, Igarapé-Açú and Santarém. **Results:** seropositivity was observed in 53.42% of index cases; of them were MB cases and among 12.1% household contacts. **Conclusions:** the results indicate that the introduction of the rapid test, as auxiliary instrument, serves for classification of index cases and household contacts of cases involved in this study, allowing to conclude that leprosy cases and their contacts are important elements in the epidemiology of the disease.

KEYWORD: leprosy, rapid tests, ML-Flow

INTRODUCTION

ML Flow test is a serological test, immunocromatographic, to detection of Immunoglobuline M (IgM) against the phenolic glycolipid I (PGL-I) of the bacillus (*Mycobacterium leprae*), which results are obtained in 5 or 10 minutes, using total blood or serum, it can be used directly by the health professionals to classify the leprosy cases and identify the treatment patients contacts with greater risk of diseasing[1]. Studies indicate that serology is more sensible than bacilloscopy, it may be used in classification of the leprosy cases in pauci and multibacillary, as well it may identify among contacts, ones of greater risk to develop leprosy[6,4,12]. This study had as purpose, to estimate the seroprevalence of antiPGL-1 by rapid test ML Flow in cases of leprosy and its household contacts from endemic municipalities of Pará State.

METHODS

Type of study and patients

The population was composed of 73 cases leprosy index and 165 household contacts of these cases, older

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than 12 years old and selected from april, 2011 to october 2012, in municipalities of Marituba, Belém, Igarapé-Açú and Santarém. The current work was approved by Federal Pará University Ethics Committee (nº 032/2009 – CEP/NMT/UFPA of September 9th, 2009), according to the Resolution 196/96 of Health National Council.

Data Collection and Performed Procedures

The Madrid classification was based in the dermatologists criteria of the health units of the quoted municipalities. Indeterminated form (I) and tuberculoid (T) were classified as paucibacillary and forms Borderline (D) and lepromatous (V) as multibacillary. The scar number BCG was obtained by the protocol records applied to each patient. The test results ML Flow and the baciloscopy were interpreted as positive and negative.

Statistical analysis

The data tabling and statistic analysis was carried out by Microsoft Office Excel 2007 and BIOESTAT version 5.0 programs.

RESULTS

The municipality of Marituba presents with a great number of registered cases, classifieds according to the treatment as multibacillary (MB) and positive baciloscopy. Madrid classification more representative is the Borderline (D) (54.79%), and as for ML Flow test result, 53.42% of confirmed case presented positive seropositivity for the test (Table 1).

TABLE 1 - General characteristic of the 73 leprosy new cases, Pará, Brazil, year 2011 - 2012.

Variables	nº	%	p-value*
Origin			< 0.0001
Marituba	38	52.05	
Belém	12	16.44	
Igarapé-Açú	8	10.96	
Santarem	15	20.55	
Gender			< 0.0001
Male	48	65.75	
Female	25	34.25	
Operational Classification			< 0.0001
Multibacillary (MB)	58	79.45	
Paucibacillary (PB)	15	20.55	
Baciloscopy			< 0.0001
Positive	34	46.57	
Negative	31	42.47	
Unrealized	8	10.96	
Madrid Classification			< 0.0001
Borderline (D)	40	54.79	
Tuberculoid (T)	10	13.70	
Lepromatous (V)	12	16.44	
Indeterminate (I)	5	6.85	
Unknown	6	8.22	
ML Flow test			
Positive	39	53.42	
Negative	34	46.58	

Note: * Chi-Square of Adherence

Source: Field Research (2011/2012)

As for household contacts, gender distribution was represented by 66.06% of cases and young adult population (42.42%). Considering the scar number BCG, a ratio of 56.97% of interviewed contacts, presented at least one scar vaccine in childhood or when adults (data obtained of the protocol records), with 70.0% of the presented contacts positive ML Flow. The seropositivity of the household contacts population test was 12.1% (Table 2).

TABLE 2 - General characteristics of the 165 household contacts. Pará, Brazil, year 2011 - 2012.

Variables	Total (nº 165) %	Positive ML Flow %	p-value*
Gender			< 0.0001
Male	33.94		
Female	66.06		
Age Group (years)			< 0.0001
Until 20	22.43		
21-40	42.42		
41-60	27.88		
> 60	7.27		
BCG scar			
None	13.33	5.0	
One scar	56.97	70.0	
Two scars	29.70	25.0	
ML Flow test			
Positive	20 (12.1)		
Negative	145 (87.9)		

Note: * Adherence Chi-Square Test

Source: Field Research (2011/2012).

DISCUSSION

In the index cases population, the male sex was more predominant, demonstrating similarity to the studies carried out in a reference Center in State of Minas Gerais, Brazil, which presented a discreet leprosy prevalence in male sex[3,9]. The bacilloscopy positivity presents with a number relatively high, diverging of the studies carried by researchers and very closer to the reached in a reference Center in Minas Gerais, Brazil[10,3]. In relation to Madrid classification, dimorphic (D) type presents as the more frequent among all other shapes, confirming to results and corroborating study carried out in a Health Center at São Luis city, Maranhão, which found out a greater ratio of the clinic shape Dimorphic in his studies[8].

The seropositivity of the ML Flow test observed in Table 1 was equal to the studies carried out by in a reference center in Minas Gerais, Brazil, therefore those studies demonstrate that antibodies levels specific to the phenolic glycolipid antigens of the *Mycobacterium leprae* correlationed to the bacterial load of the leprosy infected people[10]. According to employees, the most of the classified patients as MB has high levels of antibodies type IgM antiPGL-1, in opposit of the classified as PB, that generally have negative serology, and the level of these antibodies has correlation with the quantity of *M. leprae* in the patients, reducing during treatment[5].

Regarding to the population of household contacts (Table.2) included in the research, the female gender, of young adult population, has shown more important, the same found out by the frequency found by researchers studying the population of household contacts, as well as that found in another study with 273 individuals with leprosy in Minas Gerais[7,11].

According employees, the population of household contacts presents with a risk to develop leprosy greater than those ones that live with the sick person before he initiates the treatment, just factors like intensity of contaging and physical distance from the leprosy patients seem to be related[13,14].

It has verified that more than half of contacts showed BCG scar, meaning that they had been vaccinated with one dose, in childhood or as adults (data from the

protocol applied research) and 70.0% of those obtained positive results to the ML Flow (Table 2). A series of study has demonstrated a BCG efficiency as leprosy protector agent among household contacts, affirming that the BCG purpose against leprosy is not involved primarily with infection avoidance, but it is associated to an immune answer potentialization of the infected individual, avoiding its progression until the disease clinical study[4]. The seropositivity of the ML Flow test in household contacts is a great indirect indicator of the infection dissemination by *M. leprae* in the general population.

The seropositivity of the ML Flow test in household contacts is a strong indirect indicator the dissemination of infection by *Mycobacterium leprae* the general population. The ratio of seropositivity observed among the household and peridomiciliary contacts and 28.6% when involved 42 household contacts[2,1].

CONCLUSIONS

The results indicate that the introduction of the rapid test, as auxiliary, serves for classification of index cases and household contacts of cases involved in this study, allowing to conclude that leprosy cases and their contacts are important elements in the epidemiology of the disease.

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RESUMO

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Objetivo: trata-se de um estudo transversal, do tipo série de casos em áreas endêmicas para hanseníase no estado do Pará, estimando a soroprevalência de anticorpos antiPGL-1 através do teste rápido ML-Flow em casos de hanseníase e seus contactos intradomiciliares. **Método:** de abril de 2011 a outubro de 2012, 73 novos casos de hanseníase e 165 contactos intradomiciliares foram recrutados nas unidades de referência para tratamento da hanseníase nos municípios de Marituba, Belém, Igarapé-Açú e Santarém. **Resultados:** a soropositividade foi observada em 53,42% dos casos índices; deles eram casos MB e 12,1% entre os contactos intradomiciliares. **Conclusões:** os resultados indicam que a introdução do teste rápido, como instrumento auxiliar, serve para a classificação dos casos índices e contactos intradomiciliares dos casos envolvidos no estudo, o que permite concluir que os casos de hanseníase e seus contactos são elementos importantes na epidemiologia da doença.

DESCRITORES: Hanseníase; Teste Rápido; ML-Flow

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