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Clinical- epidemiological characteristics and knowledge about American Tegumentary Leishmaniasis in a population of Carabobo state. Venezuela

Características clínicas-epidemiológicas y conocimiento sobre la leishmaniosis tegumentaria americana en una población de Carabobo. Venezuela

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Abstract

Every year 1.5 million new cases of American tegumentary Leishmaniasis are registered in the world, this pathology is present in 88 countries, this makes it occupy the sixth place among the major diseases of the world and the second among parasitic diseases only behind malaria, but in Latin America there are few works about knowledge of American tegumentary Leishmaniasis as a support for health control programs. The objective was to determine the clinical, epidemiological characteristics and knowledge about American tegumentary Leishmaniasis in the population of the state of Carabobo, Venezuela. The research was descriptive with documentary and field research design, based on the review of the epidemiological record and application of a questionnaire. The majorities of those affected are young adults (20-59 years) (66.3%) of the male gender, workers (27.4%) with upper limb injuries (40.5%), generally unique (53.4%) and treated (86.3%). In the analyzed sample 80% know the disease, 83% the transmitter and 38% the pharmacological treatment. It was concluded that those affected with parasitism are mainly men, in economically productive age, workers and farmers, with educational levels not exceeding the high school, in relative poverty, with unique skin lesions in exposed regions of the body and treated pharmacologically; that the population knows the natural history of the disease and the transmitter, but ignores aspects of the biology of the insect; and who prefer the pharmacological treatment of the public health service.

Keywords: Leishmaniasis, signs and symptoms, epidemiology, parasitism, skin (font: DeCS BIREME).

Resumen

De leishmaniosis tegumentaria americana se registran en el mundo 1,5 millones de nuevos casos por año, está presente en 88 países, esto hace que ocupe el sexto lugar entre las enfermedades importantes del mundo y el segundo entre las enfermedades parasitarias únicamente detrás del paludismo, pero en América Latina son escasos los trabajos sobre conocimientos de leishmaniosis tegumentaria americana como sustento de los programas sanitarios de control. El objetivo fue determinar las características clínicas, epidemiológicas y el conocimiento sobre tegumentaria americana en la población del estado de Carabobo, Venezuela. El estudio fue descriptivo con diseño de investigación documental y de campo, basado en la revisión del registro epidemiológico y aplicación de un cuestionario. La mayoría de los afectados son adultos jóvenes (20-59 años) (66,3%) del género masculino, obreros (27,4%) con lesiones en miembro superior (40,5%), generalmente únicas (53,4%) y tratadas (86,3%). En la muestra analizada 80% conoce la enfermedad, 83% al transmisor y 38% el tratamiento farmacológico. Se concluye que los afectados con la parasitosis son principalmente hombres, en edad económicamente productiva, obreros y agricultores, con niveles educativos no superiores a medio diversificado, en pobreza relativa, con lesiones de piel únicas en regiones expuestas del cuerpo y tratadas farmacológicamente; que la población conoce la historia natural de la enfermedad y el transmisor, pero ignoran aspectos de la biología del insecto; y que prefieren el tratamiento farmacológico del servicio sanitario público.

Palabras clave: Leishmaniosis, signos y síntomas, epidemiología, parasitosis, piel (fuente: DeCS BIREME).

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Introduction

Leishmaniasis is a parasitic disease native to the rainforests of America, also present in Asia and Africa. Leishmaniasis represents a group of diseases caused by more than 20 different species of parasitic protozoa of the gender Leishmania spp., which by their clinical characteristics are divided into superficial and deep Leishmaniasis. The first mainly affects skin and mucous membranes, while the second damages internal organs (liver, spleen and bone marrow), that can be deadly if it is not treated [1-3].

According to the World Health Organization the Leishmaniasis predominantly affects at the very poor, especially in developing countries. It is considered that there are 350 million people at risk of contracting it, and every year there are 2 million new cases. Of these, 200,000 to 400,000 new cases of visceral Leishmaniasis are reported, with high endemicity in the Indian subcontinent and East Africa, with the most affected countries being Brazil, Ethiopia, Somalia, Sudan and South Sudan [4,5].

Of American Tegumentary Leishmaniasis (ATL) 1.5 million new cases are registered and it is present in 88 countries, this makes the ATL occupy the sixth place among the world's major diseases and the second among parasitic diseases only behind malaria. Likewise, the ATL has a morbidity burden of 2 090 000 years of life adjusted according to disability, which for men is 1 250 000 and for women 840 000. The high morbidity rate of the ATL, despite the obvious sub registration is the main factor that motivates research in this field [6].

In Latin America, ATL is probably known since the pre-Colombian period. For this area between 2001 and 2011, more than 600,000 cases of ATL were registered, with an average incidence of 15.9 cases per 100,000 habitants, in addition this parasitism is endemic in 15 Latin American countries: Argentina, Brazil, Bolivia, Colombia, Costa Rica, El Salvador, Ecuador, Guatemala, Guyana, Honduras, Nicaragua, Panama, Paraguay, Peru and Venezuela. In Venezuela it has been registered in 292 Municipalities, distributed in 22 of the 23 political-territorial entities [7-10]. The distribution of endemic focus of Leishmaniasis in Venezuela is located in the valleys of the mountainous system of the coast, the Yaracuy depression, some regions of the lowland areas, the southern Orinoco, the mountainous and forested area of Táchira, Mérida, Trujillo, Lara, Miranda and Sucre, in addition to the Carabobo and Aragua states [7-10].

It should be noted that in the first quarter of 2015 (period until which official records are available) the Venezuelan Ministry of Health reports 6 007 cases of Leishmaniasis, figures that place their morbidity below expectations without being able to discern between a decrease in casuistry or sub registration, in a context in which the tendency is to increase the number of affected [7-10]. The increase in the number of cases of ATL in many areas of Latin America is due, among other factors, to the disease in which the subject is immersed, especially those related to their knowledge of the pathologies that afflict them. Although it is clear that many of the differences in people's health status are not predetermined, since there are differences emanating from the environment in which they live and from the knowledge and practices that society has about the disease. Another relevant aspect for the management of ATL is the clinical - epidemiological behavior, because this can vary significantly between different geographical regions [11, 12].

In Venezuela, specifically in the Carabobo state, efforts have been made to incorporate the population into health actions and programs, but many of these programs do not measure the knowledge that people have about this disease. Therefore, the objective of the present research is, firstly, to describe the epidemiological clinical characteristics of the ATL and then to determine the knowledge that the population of the Trincheras of the Naguanagua municipality of the Carabobo state, Venezuela, zone with important casuistry and without previous studies on these variables, which are indispensable as theoretical inputs for the redesign of programs to endemic diseases control [13].

Methods

This study was descriptive and with research designs of documentary and field type. The research was distributed in two stages: in the first stage the clinical-epidemiological characteristics of the ATL were registered using the archives of the Health Dermatology service of the Carabobo state, Venezuela. In the second stage, through the application of a questionnaire, the population's knowledge about ATL was determined.

The instrument used was the Bastidas's questionnaire previously validated [14], which consists of 2 sections. In the first one, the identity and affiliation data are registered, such as; age, gender, occupation and degree of instruction of the respondent. In the second section, we explore through open and closed questions about the individual's knowledge about ATL. Finally, their socioeconomic characteristics were asked by family with the modified Graffar´s method that is based on the measurement of the variables: profession of the head of the family, level of instruction of the mother, main source of family income and housing conditions that , result in five social strata namely: I (high quality of life) the score of the items is between 4-6, II (moderate quality of life) values between 7-9, III (low quality of life) values between 10-12, IV (relative poverty) values between 13-16 and V (critical poverty) values between 17-20 [15].

Population and sample: The population of the Trincheras corresponds to 9,600 habitants according to local census and the “n” sample was 100 individuals, based on the expected frequency of ATL (2% taken as a reference of studies conducted in the Carabobo state) and population size. The sampling was of the probabilistic type. A standard error of 5% and a confidence level of 95% were accepted for this investigation.

On average the survey lasted 20 minutes per individual. It was applied to all persons over 11 years of age who were present at the time of the survey, since they are mature enough to adequately answer the questionnaire as they are in the final stage of cognitive development that enables them to master their mental representations and achieve reasoning Hypothetical-deductive essential to overcome the different situations that arise in your daily life. The survey was done individually and confidentially. Informed consent was obtained after explaining the objectives of the research. This work was approved by the Research Commission of the Department of Public Health attached to the Faculty of Health Sciences of the University of Carabobo.

Statistical analysis: the data was recorded and analyzed using the statistical program Epi Info 5.0. In addition to descriptive statistics, the j-square test (X2), applied to 2X2 contingency tables, was used.

Results

The majority of those affected with ATL are young adults (20-59 years) (66.3%) and male (66.3%), workers (26.3%) and mainly residing in the Marías sectors (37 % [27/73]) and the Union (30.1% [22/73]) (Table 1).

The lesions were mainly located in the upper (40.5%) and lower (32%) limbs. The skin lesions were unique in 53.4% (54/80) of those affected and multiple in 45.2% of them, and about 90% of those affected with ATL complied the prescribed treatment with methylglumine antimoniate (Glucantime®) (Table 1).

Most of the interviewees were between 20 and 59 years old (76%), belonged to the male gender (53%), were workers (31%) or were engaged in household chores (25%), had the degree of instruction the incomplete high school (23%) and belonged to the socio-economic stratum IV (critical poverty) (73%) (Table 2).

More than 80% of respondents without gender distinction (p = 0.27) know the disease, 63% ([63/100], p = 0.37) recognize the symptomatology, and 62% know that this disease is not transmitted by direct contact between affected and healthy (p = 0.28), however, only 37% know that the disease can be prevented and 38% know that animals can get sick (p <0.01) (Table 3).

Table 1 Epidemiological and clinical characteristics of the American Tegumentary Leishmaniasis in the Trincheras community, Naguanagua municipality, Carabobo state, Venezuela. 2013-2017.

Epidemiology	Frequency	%
Age group*		
Children (0-11 years)	5	6.8
Adolescents (12-19 years)	11	15.1
Young adult (20-59 years)	48	65.8
Older Adults (?60 years)	9	12.3
Gender**		
Male	49	67.1
Female	24	32.9
Occupation		
Worker	20	27.4
Farmer	15	20.5
Student	15	20.5
Household Chores	15	20.5
Employee	5	6.8
Others	3	4.2
***** The Trincheras sector**		
The María	27	37
The Union	22	30.1
The Salto	7	9.6
The Tres Marias	7	9.6
The Belen	5	6.9
The Coina	4	5.5
The Ceiba	1	1.4
Clinical characteristics		
Location of lesions		
Superior limbs	3. 4	40.5
Lower limbs	32	38.1
Abdomen	8	9.5
Neck	4	4.8
Head	3	3.6
Chest	3	3.6
Number of injuries ****		
Only	39	53.4
Multiple	33	45.2
Not registered	1	1.4
Type of injury		
Ulcerative	72	98.6
Not registered	1	1.4
Treatment		
Complied	63	86.3
Not Complied	10	13.7

Source: Record of the Sanitary Dermatology Service to the Carabobo state.

In the sample studied 61% know that the disease is related to insects and 83% knows the transmitter of ATL, however, only 8.0% understand how insects are infected (p <0.05). However, respondents know in proportions that they do not exceed 50% of what insects feed and at what time, as well as what attracts them and where they hide (Table 4).

Table 2 Socio-demographic characteristics of habitants to the Trincheras, Naguanagua municipality, Carabobo state, Venezuela. 2013-2017

Characteristics	Frequency	%
Age group*		
Adolescents (12-19 years)	7	7
Young adult (20-59 years)	76	76
Older Adults (?60 years)	17	17
Gender		
Male	53	53
Female	47	47
Occupation		
Worker	31	31
Household Chores	25	25
Merchant	15	15
Student	9	9
Farmer	7	7
Professional	5	5
Retired and (o) pensioners	4	4
Employee	3	3
Military	1	1
Degree of instruction		
Incomplete Primary	5	5
Complete Primary	10	10
Complete Secondary	19	19
Incomplete Secondary	7	7
Complete High School	22	22
Incomplete High School	2. 3	23
Complete Technical Education.	3	3
Incomplete Technical Education.	2	2
Incomplete Higher Education.	2	2
Complete Higher Education.	7	7
Socioeconomic**		
Stratum II (moderate quality of life)	3	3
Stratum III (low quality of life)	2. 3	23
Stratum IV (relative poverty)	73	73
Stratum V (extreme poverty)	1	1

Of the respondents 51% know about the treatment of ATL, 28% mention the pharmacological treatment as indicated and 13% show a preference for traditional or homemade treatment (p <0.01). With respect to the health system to which to go in search of a cure for the ATL 94% prefer the doctor-scientist (p <0.01), finally more than 80% of the respondents refer preference for the public curative service (network of institutions for the diagnosis and free pharmacological treatment of pathologies that affect the population) (p <0.01) (Table 5).

Discussion

Due to the biological, clinical, epidemiological and social complexity, the ATL remains an important public health problem that mainly affects poor populations, particularly of countries with low and medium economic resources, those that seek their development, that is why individual and collective efforts are made to find the epidemiological behavior of this parasitic first and in second place the people know about it, with the firm purpose of adapting socio-sanitary schemes and programs to ensure the control of this endemic disease, because there are differences that arise from the environment in which one lives, from knowledge and social practices towards the disease.

Since there is a large number of cases of ATL, it is understandable why the socio-sanitary projects and programs for the control of ATL have proved insufficient in coverage, permanence in time and social participation, because many of them ignore the local and specific cultural realities, the knowledge that communities have about specific parasitism, so in Venezuela it has been tried to incorporate to the community into health programs under the tutelage of institutions related to health administration and the implementation of various strategies, among which are mentioned health education, committees for the participation with work force in works of collective benefit, groups of volunteers to carry out specific actions, training of the population for the self-care of their health, among others, however, all have been insufficient for the control of the ATL [14].

Table 3 Knowledge about the natural history of the American Tegumentary Leishmaniasis to the people from the Trincheras, Naguanagua municipality, Carabobo state, Venezuela. 2013-2017

Natural history of disease	Female		Male	
	frequency	%	Frequency	%
Know the Disease	38	80.9	Four. Five	84.9
Know the symptoms that people present	29	61.7	3. 4	64.2
Know that it is not transmitted by direct contact between people	28	59.6	3. 4	64.2
Know that the disease can be prevented	21	44.7	16	30.2
Know that animals can become infected *	15	31.9	2. 3	43.4

χ2: * With significant gender difference (p <0.01).

Table 4 Knowledge about the American Tegumentary Leishmaniasis transmitter of residents of the Trincheras, Naguanagua municipality, Carabobo state, Venezuela. 2013-2017

Transmitter Cutaneous Leishmaniasis	Female		Male	
	frequency	%	frequency	%
Know that the disease is related to insects	31	66	30	56.6
Know that insect transmits ATL	39	83	44	83
Know how insects are infected *	6	12.8	2	3.8
Know what insects feed on	15	31.9	21	39.6
Know what time the insects feed	22	46.8	24	45.3
Know what attracts insects	15	31.9	17	32.1
Know where insects hide	18	38.3	22	41.5

$\chi 2$: * With significant difference between women and men who they know how insects become infected ($p < 0.01$).

Table 5 Knowledge about the treatment of the American Tegumentary Leishmaniasis of residents of Las Trincheras, Naguanagua municipality, Carabobo state, Venezuela. 2013-2017

Healing	Female		Male	
	frequency	%	frequency	%
Know the Treatment *				
Pharmacological treatment indicated by the doctor	18	38.3	20	37.7
Traditional or homemade methods	6	12.8	7	13.2
Health system you go to in search of cure for ATL **				
Medical - Scientific	43	91.5	51	96.2
Traditional	3	6.4	2	3.8
None	1	2.1	0	0
Healing service used to treat ATL ***				
Public	43	91.5	41	77.4
Private	4	8.5	12	22.6

$\chi 2$: * With significant difference between drug and traditional treatment ($p < 0.01$).
** With significant difference between health system medical - science and traditional $p < 0.01$).
*** With significant difference between public and private service healing ($p < 0.01$).

For this reason, this research was proposed whose findings regarding clinical-epidemiological behavior and knowledge of the population about ATL will contribute decisively in the control of this parasitism as a public health problem, in this sense it is reported in this paper who are finding in economically productive age they were mainly infected and among these men they are the most affected, subjects mainly dedicated to agriculture that force them to be in greater contact with the ecological niche of natural transmission of the ATL. Likewise, the characteristic of a mountain range and foothills with humid forest and lush vegetation that is typical of the Trincheras surely defines the casuistry of ATL found in this area, since it constitutes the ecosystem that usually characterizes ATL outbreaks in Venezuela and in the world, with more accentuated vegetation in the María and Unión sectors where most of the registered ATL cases in the area are located [15, 17-19].

As expected, the ATL because of its high incidence has a great impact on the population, in rural areas such as the Trincheras [20]. The maintenance of the ATL endemic, in the studied area, is due to multiple common factors to the life cycle of this parasite, among which are mentioned the ecological characteristics conducive to the development and preservation of the vector and reservoir, the possibility of contact between parasite and susceptible host; rapid and disorganized urbanization; and the purely vertical official intervention, through the design of essentially curative control programs that ignore the community's knowledge and practices about the disease [21-23].

Regarding knowledge about the ATL, the population studied recognizes the symptoms, the form of transmission and prevention, in this research we finding similarity with a research realized in the community of the Cojedes state [15], but with differences to that found in studies conducted in other Venezuelan regions, among those mentioned in the Andes mountain range, because it detected a low level of global knowledge about ATL. Also in countries such as Brazil and Colombia with populations exposed to the ATL, the information deficit is common, to the detriment of the fundamental role that these aspects have in the conformation of the socio-sanitary programs destined to combat it, hence the importance of carrying out interventions and constant evaluations of the local clinical epidemiological characteristics and the knowledge that the habitants of endemic areas have on ATL in order to reformulate them in order to achieve control of these parasitism in these areas [24-26].

The knowledge of the investigated population about ATL in terms of natural history is very interesting in comparison with the findings by Isaza [27] in Colombia who describes that 94% of the sample only recognized ATL as a skin disease, without more details. Now it is important to highlight that what was found in the Trincheras is similar to that reported by Nieves [28] in populations of the Venezuelan Andean mountain range, who also points out that knowledge about ATL is restricted to those who have suffered the disease, to family members or neighbors, a phenomenon similarly observed in the Trincheras a small community in population terms.

With respect to the ATL transmitter, more than 80% of the respondents know the vector, but mostly they do not know many of the aspects of insect biology, however, the situation in terms of knowledge is better than that reported in populations of the Venezuelan Andean mountain range and Miranda state where 35 and 45%, respectively, relate the disease with insect bites [15, 28]. It is probable that the knowledge found about the transmitter of the ATL, although partial, is due to the continuous interventions of the health sector, and also of the university, that transmit information about it, although vertically, but that have positively influenced the knowledge that the population owns [29].

The people who reported to know the treatment of ATL, indicated that the pharmacological treatment of the medical health system and the public curative service is the indicated one, this despite being bureaucratic and apathetic institutions, according to the interviewees. It is common to find out about access to health services because these are central elements for the production of satisfactory results in terms of disease control [15, 30]. In Latin America, and of specifically in Venezuela, there are few researches carried out to research the knowledge associated with the fact of contracting LTA, most of the researches focuses on aspects such as: chemical and biological control of vectors, study of reservoirs, seroprevalence in endemic areas, pharmacological treatment and immunotherapy, therefore, the information provided here will be very useful [31].

It is concluded that those affected with ATL are mainly men, in economically productive age, workers and farmers, with educational levels not exceeding the high school environment, located in relative poverty as a socio-economic stratum, with unique skin lesions in exposed regions of the body and pharmacologically treated; the population knows the natural history of the disease and the transmitter, but they are unknown of aspects of the biology of the insect; and that they prefer the medical-pharmacological treatment of the medical-scientific system and the public curative service.

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