Retrospective study of american cutaneous leishmaniosis in humans in the city of Manaus, Amazonas (2018-2019)

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ABSTRACT

American Tegumentary Leishmaniasis (ATL) is characterized as a zoonosis caused by protozoa of the genus Leishmania spp., presenting a chronic, non-contagious evolution, and its transmission occurs through the bite of sand fly insects (Diptera: Psychodidae). The process of expansion of cities, agricultural frontiers, and the occupation of peripheral areas contribute to the occurrence of epidemic outbreaks of the disease. This article aimed to study the incidence of human cases of ATL in the city of Manaus, describing qualitatively and quantitatively the occurrence of this disease. From the transfer of data from the

Notifiable Diseases Information System - SINAN, made available by the Amazonas Health Surveillance Foundation - FVS/AM, this study describes a total of 789 cases, which occurred between 2018 and 2019, in the capital of Amazonas, which were classified according to age, gender, occupation, clinical signs, as well as the condition of the autochthonous case, the relationship with work, and the evolution of the case. As a result, 789 cases were confirmed, ranging in age from 1 to 90 years, and with a higher prevalence in males. As for the form of the lesion, the cutaneous type was identified in 98.73% of the cases, and 57% of the cases had a clinical cure. The results show ATL as a disease related to the socioeconomic and mainly health conditions in which the patient fits, with a high number of patients in large expanding cities, such as the city of Manaus. Thus, further work is needed to provide clarification on the disease, especially in the state of Amazonas, as it is still a neglected disease and related to the population's living conditions.

Keywords: Sand flies, *Leishmania spp,* North region, Public health, Zoonosis.

1 INTRODUCTION

American Tegumentary Leishmaniasis (ATL) is a zoonosis of worldwide distribution, whose etiological agents are protozoa of the genus *Leishmania spp*. This contemplates at least seven dermotropic species of relevance to public health in Brazil, these being: *Leishmania (Viannia) guyanensis*; *L. (V.) naiffi; L. (V.) braziliensis; L. (V.) lainsoni; L. (V.) shawi; L. (V.) lindenbergi e L. (Leishmania) amazonensis* (SILVEIRA et al., 2008; SOARES et al., 2017; BRASIL, 2017). However, the species *Leishmania (V) braziliensis* is considered the main etiologic agent involved in the Brazilian territory.

The vectors of ATL are insects called phlebotomine sandflies, popularly known as *mosquito-palha, tatuquira, birigui,* among others, depending on the geographical location. Transmission occurs through the bite of infected sand fly females, with no transmission from person to person. Although infection occurs in domestic animals, there is no scientific evidence to prove the role of these animals as reservoirs of Leishmania species, being considered accidental hosts of the disease (BRASIL, 2019). Thus, it is considered a vector-transmitted, non-contagious disease that affects the skin and mucous membranes of affected individuals.

ATL presents three clinical forms of manifestation: the cutaneous, the diffuse cutaneous, and the mucosal form (UZCÁTEGI et al., 2020). In the cutaneous form, the lesions can be single, multiple, disseminated. In the diffuse cutaneous form, the typical ulcer is painless, rounded, with well-defined and elevated edges. In the mucosal form, on the other hand, the lesions are destructive, usually located in the upper tract (TAYLOR et al., 2010; BRAZIL, 2019).

In Brazil, the notification and confirmation of cases of leishmaniasis are mandatory, formalized by the Information System for Notifiable Diseases (SINAN). The North and Midwest regions concentrate the highest number of cases, followed by the Southeast and Northeast regions. In the South, the state of Paraná concentrates the largest number of registered cases to date. In the period from 2007 to 2014, a total

of 996 fatalities of patients with ATL were recorded in Brazil (annual average of 124.5 deaths) and a total cumulative lethality of 0.55% (0.09% by ATL and 0.46 by other causes). Of this total number of deaths, 155 (15.56%) were from the disease itself and 841 (84.44) recorded from other secondary causes (VASCONCELOS et al, 2018).

During the rainy season, the vector's population density increases considerably; therefore, this is the period with the highest incidence of the disease. In the state of Amazonas, the disease cycle occurs through contact between humans and the vectors (sandflies) and wild animals, when people interfere in the existing natural ecosystem. Epidemic outbreaks usually occur in recently inhabited agricultural areas and the peripheral zones of cities (GUERRA et al., 2017).

In the city of Manaus, cutaneous leishmaniasis is the most prevalent when compared to the other forms of the disease, a fact associated both with the proximity to the forest areas, because most of the houses in recent settlements are built less than 100 meters from the edge of the forest, both because the source of blood repast of phlebotomine sandflies, which used to be in wild animals, is made scarcer by human presence (GUERRA et al., 2017).

Given the need for studies to better elucidate this disease, this study aimed to evaluate the epidemiological profile of ATL cases over two years in the city of Manaus-AM, for the characterization of this zoonosis in the region.

2 MATERIALS AND METHODS

A retrospective survey was conducted from January 2018 to December 2019, to quantify human patients affected by ATL in the capital city of Amazonas. The information contained in this study was obtained from access to the SINAN database, made available by the FVS-AM. To obtain the data, we followed all the institutional procedures of the FVS, aiming at the speed and legality of the procedures.

The information collected included different variables, among them: patient's age and gender, clinical form of the disease, characteristics of the lesions, epidemiological classification, relationship with work, and evolution of the case.

For the analysis of the data obtained we used the method of descriptive statistics in relative percentage within the sample of patients with ATL, these data were subdivided into variables, to characterize the profile of this sample in the reported period.

3 RESSULTS AND DISCUSSION

In total, during the study period, 789 cases were counted, with the age range varying from 1 to 90 years, with a mean of 34 years. The majority of cases, 637 (80.74%), were identified in patients under the

age of 50, and the remainder, in other words, 152 cases (19.26%) occurred in individuals 50 years of age or older. These findings corroborate the results found by Delamora and Garcia (2020), who identified a high concentration of cases in the 20 to 59 age group in a study carried out in Minas Gerais.

Regarding the gender of the patients, 614 reported cases (77.82%) were in males, while another 175 cases (22.18%), were counted in females. According to Nobres et al. (2013), Almeida et al. (2018), and Teles et al. (2019) the fact that the male gender is related to a higher number of notifications is justified by the need and preference of young men, in full productive age, work associated with wood extraction, mining, and/or agricultural activities, a situation in which the affected individuals would be working in places where the disease would be present. Because of this context, it can be said that men come into contact more frequently with the items in the epidemiological chain of the disease, compared to women.

In the present study, the cutaneous form, which represented 98.73% of the cases, stands out about the mucous membrane, with 1.27% of the cases (Chart 1), meaning that there was a demand for medical care and satisfactory therapy in this period.

Table 1 - Quantification of the numbers of cases that presented cutaneous or mucosal lesions in the notifications of ATL in humans, during the period from January 2018 to December 2019, in the Manaus-AM municipality.

Kind of injury	Number of cases	Percentage (%)
Cutaneous	782	99,11%
Mucosa	10	1,27%
Total	782	100,00

These results resemble the findings of Almeida et al. (2018), in the Municipality of Rio Branco-Acre, where the authors highlight that the clinical form with the highest occurrence was also cutaneous, with 86.76% of cases, followed by mucosal with 13.23% of them. These authors, when comparing their results with other studies, concluded that the predominance of the cutaneous form also occurred in other states, such as Amazonas and the Federal District, these facts can be explained by the increase in early diagnosis of the disease, highlighting the predominance of the cutaneous form. The Ministry of Health, through the Manual of Surveillance of Tegumentary Leishmaniasis, highlights the mucosal manifestation of the disease as a worsening of the clinical picture of a cutaneous lesion, correlating it with the delay in healing of this or the establishment of an insufficient treatment (BRAZIL, 2017). This fact may be related to both the cutaneous presentation (since this is more predominant in the region of the present study) and the speed and appearance of the clinical signs of the other cases of the disease.

According to the epidemiological classification, 710 cases were autochthonous, while another 27 cases were allochthonous, and 52 cases had the undetermined classification. Nasser and Will (2017), tracing the epidemiological profile for ATL between the years 2007 and 2013, in the municipality of

Blumenau-SC, identified 77 autochthonous cases. On the other hand, Padilha et al. (2010), reported in Alagoas, in the period from 1999 to 2008, the notification of 1,338 ATL cases. The larger number of cases found in this article compared to the aforementioned studies is noteworthy, which is probably related to the Northern region of the country, where larger cases are expected.

The disease was work-related in 159 of the identified cases; however, this relationship was not confirmed in 235 notifications, and in 395 cases, this data was not reported at SINAN. According to Siebra et al. (2018), Between 2007 and 2015, 208,864 cases of ATL were reported in the country, 24.7% of which were work-related. Of this amount, almost two-thirds (74.2%) were related to farming and forestry work.

Regarding the evolution of the case in the patients, 57% of the individuals were cured, totaling 455 cases, as shown in Chart 2. The treatment, evolution, and improvement of the patient are conditioned to the choice of the drug and continuity of treatment, because the criterion for the cure of ATL is clinical, being defined by the Ministry of Health as "epithelialization of ulcerated lesions, total regression of infiltration and erythema, up to three months after completion of the therapeutic scheme" (PAES, 2016).

Chart 2: Evolution of ATL cases in humans, during the period from January 2018 to December 2019, in the municipality of Manaus-AM.

Cases Evolution	Number of cases	Percentage (%)
Healing	455	57,67
Abandonment	23	2,92
Transfer	21	2,66
Not Informed	290	36,76
Total	782	100,00

4 FINALS CONSIDERATIONS

ATL is classified as a widely distributed zoonosis caused by protozoa of the genus Leishmania spp. The expansion of cities, overpopulation, the development of agricultural frontiers, and the occupation of peripheral areas contribute to the occurrence of the disease, in the form of epidemic outbreaks, and for this reason, it presents itself as an important grievance within the context of single health.

Studies that promote clarification about ATL are necessary, especially in the state of Amazonas, since it is a still neglected disease and directly related to the sanitary and socioeconomic conditions in which the patients live. It is hoped that the data obtained in the present study can help local health professionals and collaborate in the development of health education activities, especially for residents of rural areas, for the promotion of preventive practices.

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