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American cutaneous leishmaniasis: epidemiological profile in the state of São Paulo

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ABSTRACT

OBJECTIVE

To evaluate the epidemiological profile of reported cases of cutaneous leishmaniasis in the state of São Paulo.

METHODOLOGY

This is a retrospective observational epidemiological study based on data available from Tabnet/DATASUS corresponding to the variables “gender,” “race,” “clinical form,” “residential zone”, and “epidemiological classification” for the years 2017 to 2021 in the state of São Paulo.

RESULTS

A total of 1,574 cases were reported in the state of São Paulo, with 65.9% in men and 34.1% in women. It was observed that 72% of cases occurred in individuals living in urban areas. Regarding race, 63.4% were white, 23.1% mixed-race, and 7.2% black. The cutaneous clinical form was the most prevalent (83.9%) compared to the mucosal form (16.1%), with these proportions being consistent across all the years studied. The “epidemiological classification” field, which provides information on whether the case was autochthonous or imported, was not filled in any of the years studied.

CONCLUSION

The data obtained in this study revealed a significant increase in cases of leishmaniasis in urban areas, i.e., locations with less vegetation coverage, indicating a change in the arthropod's life cycle. Significant issues in completing compulsory notification records were also observed, which could result in failures in the implementation of adequate public policies.

KEYWORDS

Cutaneous leishmaniasis, Epidemiology, São Paulo.

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1. INTRODUCTION

American cutaneous leishmaniasis (ACL) is a globally neglected disease, particularly when compared to cases of visceral leishmaniasis. Its etiological agents are protozoa of the genus Leishmania, affecting the skin and mucous membranes of humans, who are considered the host of this parasitosis. In addition to humans, other reservoirs of the disease have been identified, including rodents, marsupials, and wild canids, among others. Regarding the mode of transmission, the parasite is transmitted to the host through the bite of the female phlebotomine sandfly of the genus Lutzomyia, commonly known as "sandfly." After transmission, the clinical manifestation occurs in three forms: localized cutaneous, characterized by the presence of ulcerations with raised and infiltrated edges; diffuse cutaneous, where the lesions are widespread and nodular; and mucocutaneous, which presents with tissue necrosis. Finally, ACL can be presumptively diagnosed through anamnesis and clinical examination of the lesions, and confirmed through laboratory tests, including parasitological, immunological, and histopathological examinations[1].

ACL has a heteroxenous cycle, involving a mammalian host and an arthropod. The vector becomes infected by ingesting blood containing cells contaminated with cyclic promastigotes, which multiply through binary fission and feed on the contents of the insect's gut. This transforms into metacyclic promastigotes[2]. This parasitic form cannot multiply within the insect, necessitating migration to the anterior portions of the vector's esophagus to be inoculated into a mammal and continue its cycle[3]. Upon infecting humans, the parasites are predominantly taken up by macrophages, promoting the transformation of metacyclic promastigotes into amastigotes, which will again multiply through binary fission, rupturing the host cell and releasing the amastigotes into the extracellular environment[2].

The epidemiology of American cutaneous leishmaniasis reveals it to be a re-emerging disease of global importance. This is primarily because it affects mainly underdeveloped countries with tropical and subtropical climates, where investments in research and public health policies are scarce[4]. Moreover, tourism and business travel to endemic regions accelerate the spread of the parasitosis[5].

In Brazil, ACL is widely distributed across all regions and presents three epidemiological patterns: sylvatic, occurring in areas of primary vegetation; occupational and leisure, due to unregulated exploitation of forests; and rural or per urban, related to secondary or residual forests[6]. Additionally, studies indicate that the clinical presentation, severity, and mode of transmission of the disease vary due to the diversity of agents, reservoirs, and vectors adapted to urban environments, as well as genetic differences among organisms. Most identified species of Leishmania in the country belong to the subgenus Viannia, including Leishmania braziliensis, Leishmania guyanensis, and Leishmania amazonensis. Furthermore, according to the health surveillance secretariat, autochthony was confirmed in all Brazilian states in 2003, with the highest number of cases in the North and Northeast regions[1].

In the state of São Paulo, the first cases of leishmaniasis were identified along the banks of the Tietê River, linked to deforestation in the region[7]. Currently, it has been noted that both environmental factors, such as climate and vegetation, and low socioeconomic levels directly influence the dissemination of the disease. The occurrence of ACL has a higher incidence in municipalities with high vegetation cover and significant economic inequality[6, 8].

In light of the above, this study aimed to evaluate the epidemiological profile of reported cases of American cutaneous leishmaniasis in the state of São Paulo from 2017 to 2021. Additionally, it sought to compare the cases of autochthonous and imported cutaneous leishmaniasis in the state of São Paulo and correlate the implementation of diagnostic and prophylactic measures for cutaneous leishmaniasis.

2. METHODS

2.1 Type of Research

This is an observational analytic epidemiological study conducted through the collection and analysis of epidemiological data.

2.2 Research Location

Data collection was carried out using the online databases of Tabnet (DATASUS) at the federal level, based on information that is mandatorily reported to the Notification Diseases Information System - SINAN.

2.3 Inclusion Criteria

The inclusion criteria establish the foundations for the eligibility of materials to be analyzed. Therefore, only the following were considered: data on the notification of cutaneous leishmaniasis in the state of São Paulo; information on the distribution of autochthonous and imported leishmaniasis in the state of São Paulo; data reported between the years 2017 and 2021.

2.4 Study variables

Information on the gender of people diagnosed, age group, race, form of clinical presentation and place of residence were considered as variables, based on data found in the state of São Paulo between the years 2017 and 2021.

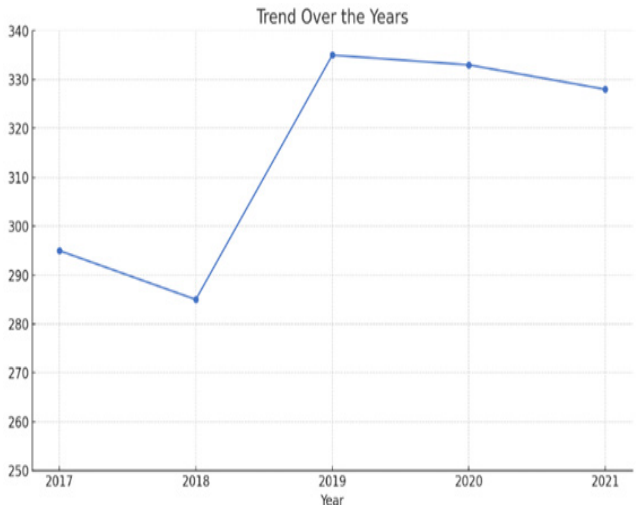
2.5 Data analysis

The parameters obtained were tabulated and presented in relative form.

3. RESULTS AND DISCUSSION

From 2017 to 2021, cutaneous leishmaniasis in the state of São Paulo reported a total of 1,574 cases, with an average of 314 cases per year, a maximum of 335 cases, a minimum of 282, and a standard deviation of 25 cases. The number of cases remained relatively stable during the analyzed years (Figure 1).

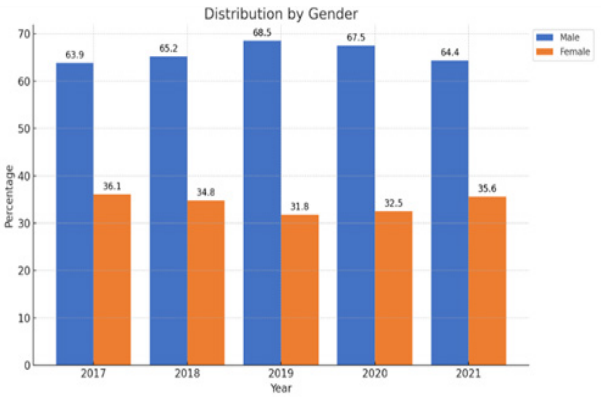
Figure 1 - Distribution of the absolute number of ACL cases in the state of São Paulo from 2017 to 2021.



Source: Authors (2024)

A higher relative prevalence of cases was observed in men (65.9%) compared to women (34.1%), with these proportions remaining stable throughout the study period (Figure 2).

Figure 2 - Relative distribution of ACL cases by gender in the state of São Paulo from 2017 to 2021.



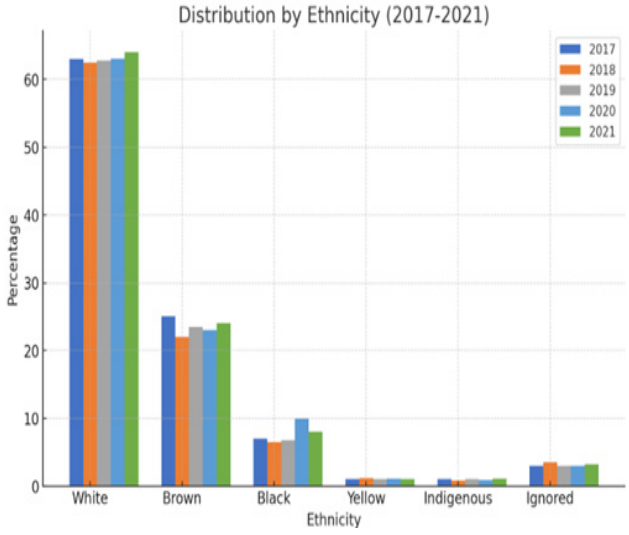
Source: Authors (2024)

The most affected age group was between 40 and 59 years. White individuals were the most affected racial group across all years (63.4%), followed by mixed-race individuals (23.1%) and Black individuals (7.2%), with a similar distribution each year studied.

Historically, adult men were more affected due to occupational exposure in forested areas where they were more exposed to the vector. However, with increasing urbanization, the number of cases in women has risen. Nevertheless, men (65.9%) continue to be the group most exposed to the disease[8].

White individuals comprised 67.7% of the cases (Figure 3). This can be related to residential zoning patterns historically adopted in Brazilian cities. Black individuals often reside in peripheral areas, whereas White individuals typically inhabit urbanized zones. This trend persists today, contributing to the formation of highly unequal, fragmented, and segregated metropolises, with higher-income groups concentrated in central areas and low-income populations relegated to peripheral zones[10].

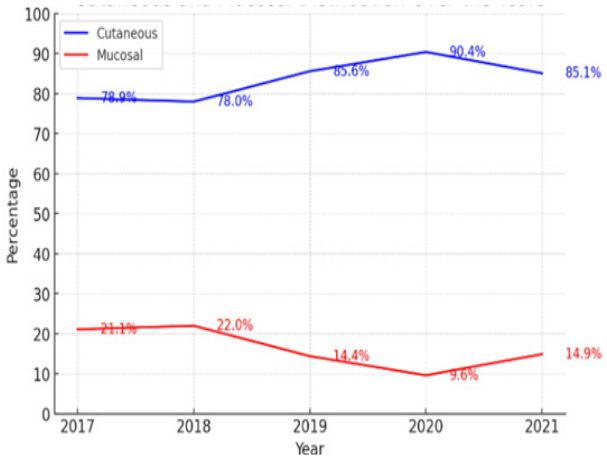
Figure 3 - Relative distribution of ACL cases by race in the state of São Paulo from 2017 to 2021.



Source: Authors (2024)

The cutaneous clinical form was more prevalent (83.9%) than the mucosal form (16.1%) overall, with similar proportions each year studied (Figure 4). The data indicate that the number of patients achieving clinical cure increased over the study period, alongside a reduction in mortality rates. The most frequently used diagnostic confirmation method was clinical-laboratory, compared to clinical-epidemiological, between 2017 and 2021.

Figure 4 - Relative distribution of ACL cases by clinical manifestation in the state of São Paulo from 2017 to 2021.

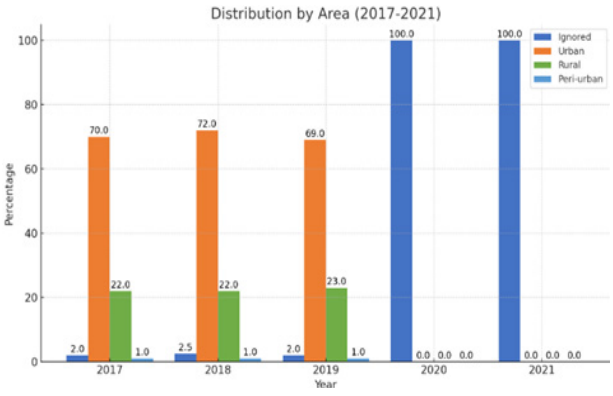


Source: Authors (2024)

The cutaneous form predominates as it represents the initial clinical manifestation of the disease. Progression to the mucosal form is less common, as it requires hematogenous dissemination, characterizing a more severe stage[11]. Correct diagnosis and treatment prevent disease progression, underscoring the importance of early diagnosis. This highlights the need for the Ministry of Health to focus on implementing public health policies to contain the increasing cases of cutaneous leishmaniasis in recent years[12].

Regarding the residential zone, data were only available for the years 2017 to 2019, as subsequent information was marked as "ignored" (Figure 5). Among the reported cases, 72.0% were from urban areas, 23.2% from rural areas, and 1.6% from peri-urban areas, with 3.2% of records failing to include this information. The Southeast region presented the highest case numbers, followed by the Northeast, Central-West, North, and South. Within São Paulo, there was a marked increase in autochthonous cases, particularly in Registro, which reported a significant rise of 43 cases in 2021. The classification field distinguishing autochthonous from imported cases was left blank for all studied years.

Figure 5 - Relative distribution of ACL cases by residential zone in the state of São Paulo from 2017 to 2021.



Source: Authors (2024)

The predominance of cases in urban areas is likely linked to deforestation over recent decades, which has created environments with heat and humidity—ideal conditions for vector reproduction. The larvae of the *Lutzomyia* sandfly feed on organic waste, such as domestic garbage, which is abundant in urban zones. Additionally, rodents, commonly found in cities, act as reservoirs for the parasite, facilitating its lifecycle. This evidences a direct relationship between the increasing number of leishmaniasis cases and unregulated urbanization and poor waste management in urban zones. These findings demonstrate that cutaneous leishmaniasis is increasingly

linked to areas with low vegetation coverage, where organic matter accumulation favors the mosquito lifecycle[9].

The study data highlight a significant increase in cases within urban zones, characterized by reduced vegetation cover, indicating changes in the vector's lifecycle. Unregulated deforestation and accelerated urbanization processes are key indicators of this behavioral shift. Furthermore, the higher incidence among White individuals correlates with the predominance of cases in urban areas, shaped by the historical urbanization process that pressured marginalized populations to reside in the outskirts of cities.

Regarding the clinical forms of the disease, data demonstrate that the cutaneous form is more prevalent than the mucosal form. The prevalence of the mucosal form, representing 16.1% of cases, suggests that early diagnosis has not been sufficient to entirely prevent disease progression. This underscores the importance of public health policies aimed at raising awareness among the population and healthcare professionals about the rising number of cases.

4. CONCLUSION

The findings suggest a stabilization of autochthonous cutaneous leishmaniasis cases in the state of São Paulo up to 2021. However, significant issues remain with the proper completion of compulsory notifications, which hinder the development of adequate public health policies essential for definitive control of this parasitic disease. This study emphasizes that cutaneous leishmaniasis remains a neglected tropical disease in Brazil.

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