Case Report

Retrospective Study of Cutaneous Leishmaniasis in The State of Roraima, North of Brazil

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Abstract

American Cutaneous Leishmaniasis (ACL) is among the neglected and reemerging diseases with outbreaks around the world. In Brazil, the northern region presents the highest incidence, presenting cases in all states of the Amazon region, and specifically the State of Roraima center of attention of our study. This communication brings a bibliographic review about the epidemiological behavior of American Cutaneous Leishmaniasis (ACL) in the State of Roraima, through a retrospective study in the period 2011 to 2015 of the cases reported with diagnoses confirmed for ACL observed in the Notification Disease Information System of the Ministry of Health of Brazil. We found 2,238 reports of confirmed cases and explored according to the variables: number of cases reported, sex, age, race, clinical form and case evolution. The majority of the patients were male (80.83%), cutaneous form of the disease (97.32%) was predominant among the reported cases. The main age group in the number of cases was people aged 20-39 years. Regarding race, we highlight an increasing number of cases (287) of ACL among Amerindians, and we still emphasize a high number (86) of abandonment of treatment. This study shows the predominance of cutaneous form of ACL in Roraima and suggests the activity of forest exploitation, leisure, mining, agriculture and residential environment as important predictive factors for infection. However, there is a lack of publications on the identification of the species of Leishmania responsible for ACL, their vectors and distribution in the state.

INTRODUCTION

American Cutaneous Leishmaniasis (ACL) is conceptually defined as an infectious, non-contagious disease caused by different protozoan species of the genus Leishmania, which affects the skin and mucous membranes of mammals. Primarily, it is a zoonotic infection, affecting animals other than humans, which can be involved secondarily [1].

In the Brazilian Unified Health System (SUS), leishmaniasis is considered a major public health problem and represents a complex of diseases with clinical aspects and epidemiological diversity that need to be better studied. The World Health Organization (WHO) estimates that more than 350 million people in 88 countries around the world are in risk areas and cutaneous leishmaniasis is the most common form of the disease with approximately 12 million people infected worldwide and two million new cases annually [2].

In 2014, a total of 16 endemic countries reported 51,098 cases of cutaneous / mucosal leishmaniasis with an incidence rate of 19.76 cases per 100,000 inhabitants (data from Suriname and French Guiana were not included in the system). A total of 75% of the cases detected were reported by Brazil (20,418), Colombia (11,586) and Peru (6,231). However, the highest incidences were recorded in Nicaragua (62.97 / 100,000 inhabitants) and Costa Rica (52, 55 / 100,000 inhabitants), countries of Central Americas region [3].

The incidence of ACL in Brazil has increased considerably, with an average of 35,000 cases / year and is distributed from the southern Amazon Basin to the south of the country [4-6]. The frequent forms of the disease is the cutaneous form that occurs in epidemic outbreaks related to forest clearing, disordered forest exploitation, and human activities linked to agriculture and recreation [7].

In the Amazon Region, seven species of Leishmania are responsible for the cases of ACL, and the species Leishmania (Viannia) braziliensis is the one with the greatest pathogenic potential in humans and is related not only to cutaneous infection, but also to the severe clinical form of long-term, with destructive mucosal lesions [8-10].

Due to the complex interaction between the Leishmania species that act as etiological agents in the Amazon region, the diversity of vectors and the different clinical manifestations of the disease in the host make the understanding of the pathogenesis of ACL in this region a challenge.

The importance for a better epidemiological understanding of ACL consists not only in the information that it has a wide geographic distribution in the country, but also because of the...
fact that clinical forms that can lead to permanent lesions is likely to cause serious psycho-social impairments in the affected individual. Understanding it globally is fundamental to adopt measures that can minimize its incidence and, consequently, the suffering of those who live with this anthropozoonosis [11].

The State of Roraima, located in the extreme north of Brazil, has been gaining importance in the national context due to the constant number of reported cases, highlighted in the study published in 2014 “considerations on American Cutaneous Leishmaniasis and its expansion in the Brazilian territory” [12], where the authors show that in the period studied, the state of Roraima presented 1,497 cases between 1980 and 1990, between 1991 and 2000 there were 3,678 cases and from 2001 to 2010, 3,940 cases, thus demonstrating an increase in the number of cases in the last three decades.

In the last two years we had been observing an increasing number of people, from several areas in Roraima, with suspicion of cutaneous leishmaniasis so we decide to do a retrospective report of the real situation for a preliminary epidemiological study of ACL in the State.

MATERIAL AND METHODS

The State of Roraima, located in north of Brazil, bordering Venezuela in the west and north of the state, Guiana at east and the states of Amazon and Pará in the south. In the year 2010, the IBGE census shows a population of 450,479 inhabitants with a projection for 2015 of 505,665 inhabitants and a growth of 12.5% per year. Currently the population of the State is estimated at 523,274 inhabitants (IBGE, 2017).

An epidemiological survey of American Cutaneous Leishmaniasis in the state of Roraima, Brazil was carried out through a retrospective study in the period from 2011 to 2015 of the cases reported by Notification Disease Information System (SINAN) [13]. The following information were collected: number of reported cases, sex, age, race and clinical form.

RESULTS AND DISCUSSION

During the study period, 2,238 confirmed cases of ACL were observed in the State of Roraima. The year of 2013 presented the highest number of cases, and 2011, the lowest (Table 1). We also can observe that (Figure 1) the distribution of ACL seems to be concentrate in the South region of the state. This area is immense in the amazon region with terra firme and semideciduous forest and an area of savanna type of vegetation going from central to north of the state.

In Brazil, the incidence of leishmaniasis is high and ACL is the one that appears most frequently in epidemic outbreaks related to the disorderly deforestation of primary forest areas, agriculture activities, mining and also leisure activities [3]. The number of reported cases in the North of the country reveals that the ACL is endemic in the state of Roraima, which has been on the ascension for the last two decades, highlighting that there is a migratory movement of people to the state in search of new job opportunities [2,14]. It is also observed that the northern region of Brazil represents the major problem of the disease in the present decade, starting in 2010, since it currently contributes with the largest number of cases detected with 98,406 cases (39.54% of the total cases registered in the period). It is also noted that the risk of the population of the North region suffering from ACL was 68.01 / 100,000 inhabitants, five times higher than the national average (13.63 / 100,000 inhabitants) [14].

Regarding the gender of patients with ACL, 80.83% were male and 19.17% were female (Table 2). These results are in line with the latest figures presented in reports on the distribution of ACL in the Americas in 2016 [5]. The high incidence of ACL related to males has been attributed due to the fact that they are in greater contact with forest regions on occasion travel and/or work and/or leisure and the low incidence in the female gender may be related to the lower aspects of domiciliary or peridomiciliary transmission in this region.

According to Table 3, the clinical form was predominantly cutaneous (97.32%) and few cases in the mucosal form (2.68%). The data in this study are similar to that reported in the PAHO report (2016) [4], where the total number of cases of ACL in the Americas indicates that 95.84% (47,046) of the clinical forms correspond to the cutaneous form and 4.16 % (1,953)

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>231</td>
</tr>
<tr>
<td>2012</td>
<td>466</td>
</tr>
<tr>
<td>2013</td>
<td>546</td>
</tr>
<tr>
<td>2014</td>
<td>489</td>
</tr>
<tr>
<td>2015</td>
<td>506</td>
</tr>
<tr>
<td>Total</td>
<td>2238</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Male N %</th>
<th>Female N %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>181 78,35</td>
<td>50 21,65</td>
</tr>
<tr>
<td>2012</td>
<td>388 83,26</td>
<td>78 16,74</td>
</tr>
<tr>
<td>2013</td>
<td>443 81,13</td>
<td>103 18,87</td>
</tr>
<tr>
<td>2014</td>
<td>401 82,00</td>
<td>88 18,00</td>
</tr>
<tr>
<td>2015</td>
<td>396 78,26</td>
<td>110 21,74</td>
</tr>
<tr>
<td>Total</td>
<td>1809 80,83</td>
<td>429 19,17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Cutaneous N %</th>
<th>Mucocutaneous N %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>223 96,54</td>
<td>8 3,46</td>
</tr>
<tr>
<td>2012</td>
<td>451 96,78</td>
<td>15 3,22</td>
</tr>
<tr>
<td>2013</td>
<td>527 96,52</td>
<td>19 3,48</td>
</tr>
<tr>
<td>2014</td>
<td>478 97,75</td>
<td>11 2,25</td>
</tr>
<tr>
<td>2015</td>
<td>499 98,62</td>
<td>7 1,38</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2178 97,32</td>
<td>60 2,68</td>
</tr>
</tbody>
</table>
the mucosal / mucocutaneous form, which is considered severe because it produces incapacity and mutilations, if not treated in an early and adequate way.

In the evaluation by age group and year (Table 4), the highest percentage of cases occurred in patients aged 20-39 years. An age group that concentrates the largest proportion of the active work force in the field, therefore, these people are exposed to sand fly vector. It is also worth noting the constant presence of cases in all years in the age group between 1 and 9 years, which can lead us to believe that in some areas intra and peridomiciliary transmission may be occurring, since in this age group, the majority of people do not leave the domiciled or in peridomiciliary area frequently.

Similar data were found in a study in Sarandi in the southern Brazilian state of Paraná [15] and in the municipality of Juína, in the state of Mato Grosso in the Brazilian Amazon [16] demonstrating that the ACL has its endemic distribution in the country with similar epidemiological aspect in both regions.

In the evaluation by race over the years (Table 5), it can be seen that the highest incidence occurred in mixed race people and that the occurrence of ACL in the Amerindian population persists and increased significantly in the year 2015.

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The data of this report are consistent with a study on the epidemiological characteristics of ACL in Assis Brasil on the Amazon frontier of the State of Acre17 similar to the state of Roraima in its general forest, economic, and border constitution. In the evaluation by clinical evolution (Table 6), we noticed that most patients were discharged by cure (1,875). It is also noted that the number of ignored or blank cases (134) in the system is significant and that 86 of the patients abandoned treatment over the years. It is noteworthy that 34 patients reported in the period did not have their clinical evolution defined in the system. The data of this survey are similar to a historical series of 21 years18 study on cutaneous leishmaniasis in the municipality of Jussara, state of Paraná, South Brazil.

**CONCLUSIONS**

Analysis of this survey concluded that in Roraima State ACL, during in the period of 2011 to 2015, occurred in 2,238 people punctually notified by SINAN, with the largest number of cases belonging to the male gender, in the age group between 20 and 39 years, most declared as mixed race with a real increase in number among Amerindian population.

ACL can be considered endemic in the population of the State of Roraima with several factors that contribute to transmission. System needs an improvement in order to better define the clinical form that the patient was discharged Although, the majority of ACL cases were discharged as cured by the system, we observed that there is a high index of patients who were considered ignored. There is also a large number of treatment abandonment, which may contribute to the permanence of the transmission cycle between humans and vectors in the state. It’s also observed that several patients did not have their clinical situation defined, demonstrating that the.

Notification measures have been taken in the state, and that disease control measures, such as diagnosis increment,
Central notifications, staff training, campaign implementation, better sanitary conditions, should be intensified in guidelines of the Ministry of Health, state and municipalities health system.

REFERENCES


Table 6: Cases of ACL, according to clinical evolution, in the State of Roraima, Brazil, from 2011 to 2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Ignored</th>
<th>Cured</th>
<th>Desertion</th>
<th>Death ACL</th>
<th>Death Other causes</th>
<th>Home moving</th>
<th>Change of diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>4</td>
<td>197</td>
<td>11</td>
<td>1</td>
<td>-</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>2012</td>
<td>40</td>
<td>380</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>37</td>
<td>1</td>
</tr>
<tr>
<td>2013</td>
<td>32</td>
<td>474</td>
<td>18</td>
<td>-</td>
<td>2</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>2014</td>
<td>13</td>
<td>440</td>
<td>20</td>
<td>-</td>
<td>2</td>
<td>14</td>
<td>-</td>
</tr>
<tr>
<td>2015</td>
<td>45</td>
<td>384</td>
<td>29</td>
<td>-</td>
<td>-</td>
<td>13</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>134</td>
<td>86</td>
<td>86</td>
<td>1</td>
<td>4</td>
<td>101</td>
<td>3</td>
</tr>
</tbody>
</table>

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