The perception of the risk factors associated with American Visceral Leishmaniasis in Petrolina, Pernambuco, Brazil.

[A percepção dos fatores de risco associadas a Leishmaniose Visceral Americana em Petrolina, Pernanbuco, Brazil]

"Artigo Científico/Scientific Article"

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Resumo

Entre os Estados da região Nordeste, Pernambuco registrou vários casos de Leishmaniose Visceral Americana (LVA), e o município de Petrolina é considerado uma importante área endêmica na região. O objetivo deste estudo foi verificar o conhecimento de pessoas acometidas por LVA em relação aos fatores de riscos associados a no município de Petrolina, Pernambuco, Brasil. Inicialmente, foi realizado um estudo retrospectivo transversal dos casos humanos no período de 2001 a 2010. De 117 casos registrados, 42 pacientes foram localizados e entrevistados. Entre os entrevistados 100% informaram que os primeiros sintomas apareceram em seis meses. Já 4,7% relataram casos na família e 13% a eutanásia de cães. Apenas 33,3% relataram ter cães em casa e 14,2% possuiam criação de porcos e galinhas. 95,3% dos entrevistados informaram que a atividade dos flebotomíneos foi maior durante a noite, mas apenas 26,1% relataram o uso de mosquiteiros e 2% repelentes. O recolhimento de resíduos sólidos foi relatado por 90,48% e apenas 4% dos domicílios tinham rede de esgoto. Apenas 38,09%, entendiam o papel da acumulação de matéria orgânica no ciclo da doença, mas 95,23% apresentaram algum conhecimento sobre o papel dos cães e vetores. Foram observados vários fatores de risco que contribuem para a manutenção e expansão da LVA em Petrolina. Os resultados do estudo ressaltam a necessidade de implementar as ações educativas para prevenção e controle da LVA, para melhorar a compressão da popopulação sobre os fatores de risco da doença, além da promoção do saneamento para as áreas endêmicas.

Palavras-chave: Leishmaniose Visceral Americana, educação em saúde, fatores epidemiológicos.

Abstract

Amongst the states of the Northeast region, Pernambuco registered several cases of American Visceral Leishmaniasis (AVL) and the municipality of Petrolina has been considered an important endemic area in this region. The aim of this study was to evaluate the knowledge of people affected by AVL in relation to the risk factors associated with the disease in the municipality of Petrolina, Pernambuco, Brazil. Initially, a retrospective cross-sectional study of the human cases was carried out, in the period from 2001 to 2010. Out of 117 cases registered, 42 patients have been located and interviewed. Among the interviewees 100% of them reported that the first symptoms appeared within six months. 4.7% reported other cases in the family .13% reported the euthanasia of dogs. Only 33.3% reported having dogs at home and 14.2% said they raising pigs and chickens. 95.3% reported that the activity of phlebotomine was greater at night, but only 26.1% reported the use of mosquito nets and 2% repellents. The collection of solid waste was reported by 90.48% and only 4% of homes had sewage system. Only 38.09% said they understand the role of the accumulation of organic matter in the disease cycle, but 95.23% presented some knowledge about the role of dogs and vector. Several risk factors contributing to the maintenance and expansion of the LVA were observed. The results

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of the study highlight the need for implement education for prevention and control of AVL to improve the compression of the population about the risk factors of the disease. Besides the promotion of sanitation to endemic areas.

Key words: American Visceral Leishmaniasis, health education, epidemiological factors.

Introduction

American Visceral Leishmaniasis (AVL) is an anthropozoonosis widely distributed in the Brazilian territory. The Northeastern region has the highest number of cases (SHERLOCK and ALMEIDA, 1970; GONTIJO and MELO, 2004). The socioeconomic profile of the population and the lack of information can interfere in the prevention and control of disease.

Amongst the states of the Northeast region, Pernambuco registered a total of 1,465 cases during the period between 2000 and 2010 (MINISTÉRIO DA SAÚDE). Its zoonotic cycle is clearly established in urban and peri-urban areas of many municipalities, and most especially in Petrolina (DANTAS-TORRES and BRANDÃO-FILHO, 2006).

In the time period between 2000 and 2007, more than 100 cases were registered in the city of Petrolina (SESPE, 2008). Different epidemiological factors, such as urbanization, precarious living conditions, lack of basic sanitation, and the accumulation and inadequate destination of solid waste, may have contributed to the expansion and incidence of the disease in the city (CESSE et al. 2001).

Considering the factors mentioned above, the aim of this study was to evaluate the knowledge of people affected by AVL in relation to the risk factors associated with the disease in the city of Petrolina, Pernambuco, Brazil.

Material and Methods

Initially, a retrospective cross-sectional study was carried out about the human cases of AVL, in the period from 2001 to 2010. These data were obtained through using investigation forms from the Information System of Diseases and Notifications (SINAN/MS), supplied by the Management Center of Environmental Vigilance in Health of the State Health Secretariat of Pernambuco.

After the survey cases, a survey of the names and addresses of all patients with AVL registration, residents of the referred municipality, was carried out at the 8th Regional Health Management Center of Petrolina (8th GERES). The People were located and invited to participate in the study with the Consent form. In the cases of death, the family members were used as sources of information.

The main variables analyzed were: sex, age, when the first symptoms appeared, if the treatment was done, how many family members were affected, it was euthanizing any dog with visceral leishmaniasis (LV), if there is presence of sand flies, which schedule greater discomfort, if any protection against mosquitoes use if there is garbage collection, which target the same, if there is chicken in the house, if there are bathrooms and sanitation in the neighborhood and had some knowledge of the relationship of the disease with dogs and organic matter .

The data about the knowledge and perception of AVL and of the epidemiological factors involved in the cycle of the disease were obtained through a structured questionnaire with closed, open and semi-open questions, from 42 people who had the disease or were undergoing treatment. A descriptive analysis was carried out to obtain the absolute attributions frequency and percentages of the presented answers.

All procedures described above were carried out after approval by the ethics committee of the Federal Rural University of Pernambuco and are in accordance with the Declaration of Helsinki of 1964, revised in 1975, 1983, 1989, 1996 and 2000.

Results

After the analysis of the referred forms, it was verified that in the period from 2001 to 2010 the municipality of Petrolina registered 117 cases of AVL that were distributed in both rural and urban areas. From the 117 cases in the series of the years studied, 42 cases of AVL were interviewed (35.89%). Among these, 70% (25/42) were registered in the urban area. From all the interviewees 59.52% (25/42) were men and 40.47% (17/42) women.

The study showed that children between zero and 12 years represented 45.6% (19/42) of all evaluated cases. Among them 15.78 % (3/19) were children under six years old.

Regarding specific symptoms, 100% of the interviewed cases, had the first symptoms six months before the diagnosis. They reported fever, paleness, loss of weight, weakness and pain in the abdominal region. From all the interviewees, only 4.7% (2/42) reported having up to two members of the family infected with AVL.

During the study period, 33% (14/42) reported have dogs at home and only 35.71% (5/14) of the interviewees reported euthanasia of dogs with symptoms suggestive of Visceral Leishmaniosis (VL).

With respect to the time of the day with higher presence of phlebotomine sand flies, 95.3% (40/42) of interviewees complained about having a great quantity of them during the night and 4.7% (2/42) in the late afternoon, mainly from 4:00 pm. Among the interviewees only 7.14% (3/42) were able to describe the general characteristics of the vector, and 28.87% (12/42) knew the relation of the vector with the disease. However, when asked about the use of protection against vectors, only 26.1% (11/42) reported the use of mosquito nets and 2% (1/42) utilizes repellent.

With respect to garbage collection, 90.48% (38/42) stated that the collection occurred at least two times a week. However, in the district of Izacolândia, rural area of the municipality, 100% of the interviewees reported deficiency in garbage collection with a consequent accumulation of solid waste in various empty wastelands.

Only 28.57% (12/42) of interviewees reported understanding the role of this factor in the cycle of AVL.

However, when the individuals were asked about the role of dogs and the vector insects in the cycle of the disease, 95.23% (40/42) presented some level of knowledge about these factors, and many were able to describe some suggestive clinical signs of VL in the dogs, as well as some external characteristics of the phlebotomine sand flies.

With regards to animal breeding or domestication, the study showed the presence of semi-domiciled dogs, birds (domestic chickens), pigs and equidae in the proximities, and, sometimes, in the backyards of houses, principally in locations where there was accumulated garbage. However, when questioned about the presence of chicken coops and pigsties in the residences, only 14.2% (6/42) stated having them. Considering the presence of bathrooms, 95.3% (40/42) stated having and using a dug up ditch. In the interview, 92.4% (39/42) of residents complained about the lack of sewage systems and basic sanitation.

Discussion

The majority of AVL cases were found in the urban area of Petrolina. This data corroborates with a study carried out by Xavier-Gomes et al. (2009) in the state of Minas Gerais, which reported that from a total of 51 evaluated patients, 72.5% were from urban areas and 21.6% were from rural areas. These findings also corroborate with many other authors who present a strong tendency of the urbanization of AVL (COSTA et al. 2008; LAURENTI, 2009).

Kawa and Sabroza (2002) reported that the general urban movement has propitiated the necessary conditions for the propagation of the disease in well defined focused areas, where there has been increasing close contact between susceptible individuals and vectors. Anthropogenic modifications over the environment have considerably reduced

the ecological space of the disease, interfering in its wild cycle and favoring the adaptation of the vectors to other environments (JERONIMO et al. 1994; BEVILACQUA et al. 2001).

Considering the predominance of the disease in males, the results presented in this study corroborate with those presented in the states of Rio Grande do Norte (JERONIMO et al. 1994), Mato Grosso (MESTRE and FONTES, 2007), Bahia (CUNHA et al. 1995) and Minas Gerais (BOTELHO et al. 2009), where the proportion of infected male individuals was higher. The possible reason for this is the higher exposure of male individuals in their occupational activities (SILVA et al. 2001) – causing more bites from vectors in men than in women (COSTA et al. 1990).

AVL has been frequently reported in the infantile population (SILVA et al. 2001), particularly amongst individuals between 0 and 4 years of age (OLIVEIRA et al. 2006). The reason for higher susceptibility in children is due to their state of relative cellular immunological immaturity and malnutrition, which is very common in these endemic areas. Children are also more exposed to the vector in peridomicile areas. The deaths observed in the infantile population are similar to those reported by Queiroz et al. (2004) where a study carried out in a children's hospital of the state of Pernambuco found that 12% of the children with AVL were below 5 years of age, a population with a 2.9% higher risk of death. According to Badaró et al. (1986) lasting immunity grows with age and it is probable that the higher frequency of the disease and death in the underage group is due to their higher susceptibility to infections and to the general reduced immunity observed in this age group. This group is vulnerable not only to infection by *Leishmania* but also to secondary bacterial infections (QUEIROZ et al. 2004).

With respect to the symptoms which were most reported, they corroborate with those described by Silva et al. (1997) and Pedrosa and Rocha (2004), where one study carried out in the cities of São Luis–MA and Maceió–AL, found that symptoms such as fever, paleness, weight loss and abdominal pain were common complaints amongst patients.

According to Nascimento et al. (2006), members of one same family who share common everyday habits in the endemic area, submit themselves to similar risks of infection. However, Bradley (1977) postulates that there may be a genetic susceptibility to infection by *L. infantum* in specific families.

According to Camargo-Neves (2007), the canine infection precedes the human cases. However, Gontijo and Melo (2004) highlight the fact that understanding the interrelationship between changes in the urban environment and phlebotomine vectors constitutes a basic prerequisite for the development of appropriate actions of prevention and control strategies.

With regards to domestic dogs, the results differ from those reported by Cesse et al. (2001), where a previous study in the referred municipality found that only 12% of interviewees had dogs in their residences. Although the dog is considered the principal domicile reservoir in urban environments, Nascimento et al. (2005) highlighted that vector control has been more effective in controlling AVL.

With regards to the time of higher activity of the phlebotomine vectors, the results corroborate with those observed by Gama et al. (1998), who in a similar study in endemic areas of the state of Maranhão, found that 79.9% of the population complained about the mosquitoes during the afternoons.

The findings about basic sanitation corroborated with Costa (2005), who evaluated the influence of basic sanitation services in the city of Teresina–PI, and found a higher risk of human infection where there is no sewage system or regular garbage collection. They also corroborate with findings of a study carried out in Portugal by Cortes et al. (2007), which confirms an increase in the prevalence of

the disease (19.2%) in locations with high accumulation of garbage. These studies also highlighted that badly planned urban development can lead to an increase of solid waste and deficient hygienic-sanitary conditions, attracting stray dogs and infected vectors to the peridomicile. About the knowledge of the epidemiological factors, the findings of the present research study differ from those of Borges et al. (2008), who in the state of Minas Gerais found that only 1.2% of the population knew about the vector. The proper environment handling activities and orientation of the population about the importance of maintaining their yards clean, tree trimming, and adequate conditioning of solid waste, were examples of measures that can contribute to vector control. Borges et al. (2008), and Magalhães et al. (2005), reported that health educational programs are essential for improving control of the disease, and that aside from being less expensive these activities present effective and lasting results in the combat against VL.

With regards to raising chickens and pigs, the findings differ from those of Cesse et al. (2001), who in a previous study in the referred municipality, in the period between 1992 and 1997, found that 37% of the population stated they raised animals. Although chickens are not considered reservoirs of *L. infantum*, they do represent a source of food for the multiplication of phlebotomine vectors (ALEXANDER et al. 2002). Moreover, the presence of these animals in the domiciles was correlated with the presence of the infection in dogs, demonstrating the role of these birds as promoters of high densities of the vector (ALEXANDER et al. 2002).

With respect to the presence of bathrooms the findings of the study differ from those of Cesse et al. (2001), who verified that only 69% of interviewees possessed them. However, they agree in relation to the lack of sewage systems, where only 4% reported having them. In relation to the existence of a ditch, the obtained data differ from those reported by Caldas et al. (2001) in the city of São Luís–MA, where they found that 93% had them.

It is also important to emphasize that the findings described above agree with an important survey carried out by Boraschi et al. (2008), which verified a predominance of visceral leishmaniosis in populations with precarious habitation sanitary conditions, in many cities of Brazil, suggesting a probable relationship between these parameters and a higher risk of developing the disease.

Conclusion

Several risk factors that may contribute to the maintenance and expansion of AVL in Petrolina were identified. Although the population know the role of the dog and the vectors in the disease. But this knowledge has not generated changes in daily practices as an example: The use of mosquito nets and avoid raising animals close to home and there is lack of information about the role of solid waste in the disease cycle. All these components demonstrate that the process of education in these communities should be permanent and must be able to develop behavioral change. Together with this, measures to improve sanitation should be prioritized in endemic areas.

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