

Epidemiologia - Epidemiology

EP1 - SAND FLY FAUNA FROM THE GAFANHOTO PARK, IN DIVINOPOLIS, MINAS GERAIS, BRAZIL

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The Leishmaniasis are zoonoses transmitted by insects of the genus *Lutzomyia* (Psychodidae, Phlebotominae) infected by protozoans of the genus *Leishmania*. In Divinópolis, there are records of occurrence of human cases of American Cutaneous Leishmaniasis (ACL) in the 90s. In the city, the occurrence of canine cases is increasing. This fact is worrying, once the dog is considered the main urban reservoir of VL. Also there is a considerable lack of information about Leishmaniasis in the area, which justifies the development of a project. This study was performed from October, 2007 to September, 2008 and the insects were captured monthly using 6 HP traps. The number of sand flies captured was 306 belonging to two genus, *Brumptomyia* and *Lutzomyia*: (20.6%) *B. brumpti*, (0.2%) *B. pinto*, (45.4%) *L. aragaoi*, (0.7%) *L. bacula*, (2.9%) *L. braziliensis*, (0.3%) *L. brumpti*, (0.3%) *L. christenseni*, (0.7%) *L. fischeri*, (0.3%) *L. lenti*, (6.2%) *L. lutziana*, (0.3%) *L. mamedei*, (2.9%) *L. monticola*, (1.3%) *L. neivai*, (2.6%) *L. sallesi*, (8.6%) *L. sordellii*, (1.6%) *L. termitophila*, (0.3%), *L. whitmani* and (1.3%) *Lutzomyia* sp. These traps are installed in two distinct areas of the park: in the line-A (native vegetation) 114 flebotomíneos of 10 species had been collected, and in the line-B (exotic vegetation) they had been 192 individuals of 15 species, including the 3 vectors species of the ACL (underlined). A higher number of insects were captured in the area whose vegetation was not origin indicating an anthropic action in the environment. Our results indicate that from all captured species, three are incriminated vectors of ACL. Later, *Leishmania* infection will be tested in those sand flies, aiming to a better understanding of infection rates and to the knowledge of the epidemiology of the Leishmaniasis in the city.

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EP2 - AMERICAN TEGUMENTARY LEISHMANIASIS: COMPARATIVE ANALYSES OF THE EPIDEMIOLOGY, DIAGNOSIS AND TREATMENT OF PATIENTS FROM REGION DIFFERENTS OF THE STATE MINAS GERAIS, BRAZIL

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The american tegumentary leishmaniasis (ATL) is in expansion in Brazil and represents important cause of morbidity for populations who live in endemic areas. In the period between 2002 to 2006 were evaluated the epidemiological aspects, diagnosis and treatment of 824 patients with ATL from different regions of Minas Gerais (MG), being 261 from southern and southwestern regions (SSMG) and 563 from Rio Doce Valley (RDV). It was observed decrease of 60.0% of cases in SSMG and of up to 26.0% in RDV. The cutaneous clinic form was predominant with 92.0 and 94.0% in SSMG and RDV, respectively. In SSMG the majority of the patients (52.0%) has urban residence, while in RDV, rural (96.0%). In the SSMG there was positivity in 56.0, 11.0 and 20.0% of cases in the Montenegro test (MST), parasitological and histopatological exams, respectively. In the RDV the positivity was 84.0% in the MST and 73.0% in the parasitological exam. In relation to treatment, in the SSMG the pentavalent antimony (Sb^V) was employed in 84.0% of the patients; amphoterecin (2.0%) and pentamidine (1.0%), while in the RDV the Sb^V was employed in 97.0% of the patients and 3.0% were treated with vaccine. In the RDV the treatment plan was 10 days with interval of 10 days for each series, until complete scaring. Although in the SSMG, the plan was 20 days continued; where there wasn't complete scaring after 3 months of concluded treatment the plan was repeated with duration of the series by 30 days. The cure varied from 72.0 to 92.0% in SSMG and until 78.0% in RDV. In this region, it was observed 1.0% of obit, while in SSMG, 8.0%. The data showed the necessity of a reference centre in SSMG to diagnosis and treatment, as well as establish strategies of disease control in MG.

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EP3 - FOLLOW UP OF A DOG POPULATION IN AN ENDEMIC AREA OF AMERICAN VISCERAL LEISHMANIASIS FROM BRAZIL.

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We performed a serological and clinical follow up of a dog population in an endemic area of American Visceral Leishmaniasis estimated by indirect immunofluorescent assay (IFA) and western blot (WB). The results obtained from IFA in the beginning of the follow up demonstrated that 41.7%(25/60) were seropositive and one year later, in the end of the study, 50%(30/60) of the animals were seropositive. Two serological profiles were observed: the first one ranging from 1/40 to 1/80 and the second 1/160 to 1/1280. It has been proposed that the culling infective dogs with titer of 1/40, represent an effective measure for the control of LVA. However, our results suggested that only the dogs with titers of $\geq 1/160$ that belonged to the profile two should be culled, because all of them presented ascendant serological titers and they were potentially infective for the sand flies. In the WB, it was observed that 50% of the dogs were positive and they presented the recognition of the peptides of 29 and 32 kDa. Among the positive dogs, exclusively the sera from symptomatic ones recognized the peptide of 68.5 kDa. Our results corroborate with the use of western blot analysis as a precocious method for detecting *L. chagasi* infection in dogs.

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EP4 - RISK MAPPING OF VISCERAL LEISHMANIASIS: THE ROLE OF A DOG POPULATION IN THE EPIDEMIOLOGY OF THE DISEASE.

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Visceral Leishmaniasis is a vector-borne disease highly influenced by ecological factors. Applications of Geographic Information Systems (GIS) have been reported in studies on epidemiological surveys and proved to be a suitable technology to map and analyze environmental factors that affect spatial and temporal distribution of both hosts and vectors. A model was developed for mapping the distribution and incidence of canine VL in a peri-urban area in the Rio de Janeiro state, where seroprevalence was 50% and serological titers ranged from 1:40 to 1:1280. GIS and spatial clustering techniques were applied to evaluate the presence of high-risk areas of *Leishmania infantum chagasi* infection. All the places for sand fly capture, seropositive and seronegative dogs and other features of interest in the area were mapped using Garmin GPS receivers to permit the calculations of latitude and longitude. For the GIS analysis, ArcGis software was used to merge the locational database with the study group data. Based on the maps that were generated, it was observed within this highly endemic place, a considerable local variation in the infection incidence as well as in the distribution of serological titers, defining an area of high risk. Our results suggest that the proximity from the preserved vegetation looks to be the main environmental factor associated with the distribution of the infection and incidence of high titers.

This work received financial support from CNPq/Fiocruz – Papes IV, from Instituto Oswaldo Cruz and Faperj / APQ1.

EP5 - FIRST REPORT OF *Leishmania (Leishmania) infantum* IN DOMESTIC CATS (*Felis catus*) FROM BELO HORIZONTE, MINAS GERAIS, BRAZIL

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Visceral leishmaniasis (VL) in Brazil is a zoonosis caused by *Leishmania (Leishmania) chagasi* sin *L.*

(*L.*) *infantum*, transmitted by sand flies of the species *Lutzomyia longipalpis*. In urban areas, domestic dogs are the main reservoir of the parasite. The literature has described other mammals infected by *L. infantum* as marsupials, cats and rodents. Among these, the domestic cat requires special attention because they are a booming population in recent years in Brazil, both domiciled and homeless, and by close contact with humans. Because of this, become necessary studies to identify the presence and prevalence of the disease among these animals in endemic areas for VL. This study aimed to check the occurrence of VL in cats from Belo Horizonte City (Minas Gerais State) and the Metropolitan Region of Belo Horizonte (MRBH), areas with high prevalence for VL. Serological survey was conducted in 86 cats (50 females, 36 males) of various races, through tests of enzyme linked immunosorbent assay (ELISA) and indirect immunofluorescence antibody test (IFAT). In 86 samples of serum, 45 (52.32%) showed positive result for anti-*Leishmania* antibodies by IFAT (reactive serum at 1:40 titre) and 51 (64.55%) of 79 samples had positive reactivity in ELISA (cut-off= 0,109). Bone marrow samples were collected randomly from seven animals with positive serology prior and submitted to specific PCR for *L. infantum* *k*DNA. In five samples (71.42%) results were positive. The present study describes for the first time domestic cats naturally infected by *L. infantum* in Belo Horizonte and RMBH, through serological and molecular techniques. More studies should be conducted to assess their ability to infect sand flies and what is the role of these animals in the epidemiology of VL. Financial support: FIP- PUC MINAS and Serology Laboratory of *Leishmania* (ICB-UFMG)

EP6 - SEROPREVALENCE OF THE TOXOPLASMOSIS IN PREGNANT WOMEN ATTENDED BY PUBLIC HEALTH CARE CENTERS IN DIVINÓPOLIS, MG, BRAZIL

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The toxoplasmosis is a worldwide distributed disease caused by *Toxoplasma gondii*. This illness has great medical and public health importance mainly in pregnant women and infants. A preliminary study of the infection rate in Divinópolis showed a high prevalence among pregnant women. Nevertheless, new studies are needed in order to clarify the current situation of this disease in the area. So that, the main objective of this project is to estimate the toxoplasmosis prevalence in Divinópolis district in one-year period and then relate them with the bioclimatic events for a better understanding of the epidemiology. The data on the toxoplasmosis counts in pregnant women were collected and had been stored in the Municipal Health Care Center in the period through October 2007 to September 2008. The preliminary results showed that in this period 788 pregnant women were diagnosed. From this total, 407 were infected by the parasite, where 49.23% had contact with the parasite or were in chronic phase, 2.41% exhibited clinical symptoms of toxoplasmosis. Patients between 25 and 29 years-old were the mostly affected accounting for 184 exams, where 3.26% had intense toxoplasmosis. Further, we will correlate such data with de bioclimatic events such as temperature and rainfall. Based on our results, we intend to improve prevention measures, understand the epidemiology of the disease and bring a better life quality for the affected populations in the district studied. Financing: FAPEMIG/ FUNEDI - UEMG

EP7 - STUDY OF EPIDEMIOLOGICAL ASPECTS OF TOXOPLASMOSIS IN PREGNANT WOMEN ASSISTED IN TWO PRIMARY HEALTH CARE SITES IN DIVINÓPOLIS, MINAS GERAIS, BRAZIL

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Toxoplasma gondii is a protozoan parasite that affects a wide variety of warm-blooded vertebrates including humans. Transmission occurs in many ways, but the most severe cases occur in women infected during pregnancy. Depending on the trimester of pregnancy the child could be born with physical and mental problems. Within this context

and given the little information on this disease the objective of this study was to assess the main factors related to the transmission of toxoplasmosis in pregnant women in the city of Divinópolis. Questionnaires were applied in 91 pregnant women referred to the two primary care health center located in different districts. Preliminary results were obtained through quantitative analyses and demonstrated that there were significant differences between the two sites. In Niteroi site were applied 51 questionnaires, while in Interlagos site were applied 41. The analysis showed that an average of 78% of pregnant women have no knowledge about the disease. And, despite the fact that 100% of pregnant women have houses with sanitation, they have habits that can facilitate the transmission of toxoplasmosis such as: 7.84% and 7.5% of having cats as pets, 43.14% and 27.5 % have direct contact with land, 21.57% and 12.5% have the habit of eating rare meat, respectively in Niteroi and Interlagos districts. At the end of the project is intended to analyze the results compared in the two districts studied so that appropriate measures of intervention and prevention of the disease are made by the Municipal Authorities. It is also intended to establish a Programme of Education for Health in order to educate health professionals in the area of the municipality of Divinópolis to enable a better surveillance of the disease. Financing: FAPEMIG/ FUNEDI – UEMG.

EP8 - CHARACTERIZATION OF BIOLOGICAL STRAINS OF *Trypanosoma cruzi* CHAGAS, 1909 (KINETOPLASTIDA, TRYPANOSOMATIDAE) ISOLATED OF *Triatoma sordida* STAL, 1859 (HEMIPTERA, REDUVIIDAE).

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Chagas' disease as is described by Carlos Chagas in 1909, is the causative agent protozoan *Trypanosoma cruzi* which includes in its life cycle host mammals and hemiptera hematophagous. Information from the World Health Organization (WHO) indicates that between 16 and 18 million people in Latin America are carriers of Chagas disease, and 120 million people live in areas at

risk. The Triatominae comprise 18 genera and 142 species, of which at least 44 are found in Brazil. Of these, at least five species can colonize in human homes and are of epidemiological importance : *Triatoma infestans*, *Panstrongylus megistus*, *T. brasiliensis*, *T. pseudomaculata* and *T. sordida*. In 2004 and 2006 Rosa et al. collected specimens of *T. sordida* in peridomiciliary environments in the Santo Inácio district, Gentio do Ouro City, State of Bahia and he isolated 12 strains of *T. cruzi*. Of these *T. cruzi* isolates, the study reports the characterization of strains SI₈ and SIG₃ in Swiss albino mice and isogenics BALB / c. It showed a parasitemic curve for each strain isolated in the two animal models. The results revealed that the strains SI₈ and SIG₃ in Swiss albino mice presented differences between the profile curves parasitemic. In comparison to the same strains in isogenic BALB / c mice, there was observed less individual variability. The curves also showed differences between the two strains of mice. According to Albuquerque (2001), that kind of behavior is often observed when isolating a new strain of parasite, a fact that is related directly to stabilizing the relationship between the parasite and the vertebrate host. The study being molecular characterization of these two strains.

EP9 - PARASITOLOGICAL AND SEROLOGICAL SURVEY OF MALARIA DISEASE IN HOWLER MONKEYS (*Alouatta guariba clamitans*) FROM SÃO PAULO STATE, MAINTAINED IN DEPAVE (DEPTO. DE PARQUES E AREAS VERDES).

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Several authors reported that malaria found in New World monkeys has been related with that occurred in human beings and it is characterized as zoonosis. Those results lead us to study a parasitological and serological profiles of howler monkeys captured from several localities of Atlantic Forest of São Paulo state and maintained in DEPAVE areas. A total of 66 monkeys were studied with Ethical protocols consent. Those monkeys were studied for the investigation of their

parasitological (thin/thick blood smears and multiplex PCR) and serological status. Serological tests consisted of Enzyme Linked Immunosorbent Assay (ELISA) with synthetic peptides of the circumsporozoite protein (CSP) of classic *Plasmodium vivax*, variants *P. vivax* (VK247 and "vivax-like"), *P. malariae/P. brasilianum* and Indirect Immunofluorescence Assay (IFA) with asexual forms of *P. vivax*, *P. malariae* and *P. falciparum*. Approximately 13.63% of thin and thick smears were positive and 6.06% of them exhibited inconclusive forms. Multiplex PCR showed that 21.21% of monkeys' blood was positive for *Plasmodia* and 10.6, 6.06 and 1.51% were respectively positive for *P. vivax*, *P.falciparum* and *P. malariae*. Serological tests revealed the percentage of 9.06% and 10.6% for classic *Plasmodium vivax* and *P. vivax* VK247 while no antibodies against *Plasmodium vivax* like CSP were found. The percentage of 13.63% for *P. malariae/P. brasilianum* antigens was detected. The frequencies of antibodies against sexual forms were 42.42%, 56.08% and 36.36% for *P. vivax*, *P. falciparum* and *P. malariae* respectively. These are preliminary results and more studies concerning about mtDNA (mitochondrial DNA) and MSP-19 corresponding to *P.vivax* and *P.falciparum* will be carried out. Supported by FAPESP 05-56055-1.