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FREQUENCY OF THE FELINE LEUKEMIA VIRUS (FELV) IN DOMESTIC FELINES (FELIS CATUS) SEMI-DOMICILED IN THE MUNICIPALITIES OF PELOTAS AND RIO GRANDE

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ABSTRACT

Considering the importance of FeLV in the feline clinic, as well as the likely agent spread from a symptomatic or asymptomatic feline bearer, this work had as objective the study of the frequency of FeLV in felines residents in the cities of Pelotas and Rio Grande, municipalities located in the south area of Brazil. For that, the blood of 120 semi-domiciled animals was collected for the detection of the retrovirus through the Indirect Immunofluorescence technique (IFA). FeLV was detected in 38.3% (46/120) of the studied animals, representing a larger frequency regarding other studies accomplished in other areas of Brazil, what confirms the importance of FeLV in the studied region.

Keywords: FeLV, felines, retrovirus, immunofluorescence

RESUMO

FREQUENCIA DO VÍRUS DA LEUCEMIA FELINA (VLFe) EM FELINOS DOMÉSTICOS (FELIS CATUS) SEMI-DOMICILIADOS NOS MUNICÍPIOS DE PELOTAS E RIO GRANDE

Considerando a importância do VLFe na clínica felina, assim como a possível disseminação do agente a partir de um felino portador sintomático ou assintomático, o estudo tem como objetivo estudar a freqüência de viremia pelo VLFe em felinos residentes em Pelotas e Rio Grande, municípios situados na região sul do Brasil. Para isso foram coletados sangue de 120 animais semi-domiciliados para a detecção do retrovírus através da técnica de Imunofluorescência Indireta (IFI). A viremia foi detectada em 38,3% (46/120) dos animais estudados, representando uma freqüência maior em relação a outros estudos realizados no Brasil, o que confirma a importância deste agente na região estudada.

Palavras-chaves: VLFe, felinos, retrovírus, imunofluorescência

INTRODUCTION

The feline leukemia virus (FeLV) is an oncogenic, immunosuppressive retrovírus of worldwide distribution, which affects domestic and wild cats. The transmition occurs by direct contact between the infected animal and the susceptible one, through saliva, bites, mating, and contaminated secretions. The

transplacental transmission can also occur when the pregnant female is a virus bearer, infecting the fetus and causing abortions and/or stillborn cats (ARJONA et al., 2000).

Clinical manifestations of the FeLV are attributed to the retrovirus´s oncogenic and immunosuppressive effects, encompassing non-specific clinical signs, such as fever, anemia, lymphadenopathy, weight loss, glomerulonephritis, enteritis, and thymus atrophy occasioning high mortality rates (JARRETT, 1999). Approximately 80% of viremic cats´ deaths are due to immunodepression, whereas 20% are effects of tumor occurences, being lymphoma the most frequent case (PONTIER et al., 1998; COSTA et al., 2000). Three FeLV pathogenic subgroups have been identified for the felines. Subgroup A represents the smallest pathogenicity, subgroup C causes non-regenerative anemia, and subgroup B causes different pathologies, such as lymphomas, anemia and leukemia (ARJONA et al., 2000).

The evolution of infection by FeLV depends on different factors, among them inoculation dose, strain virulence, exposure time, and the host´s intrinsic characteristics, such as age and immunological condition. The susceptible animal can react to the infection in different ways, being able to endure a transitory viremia stage, in case there is an immunological response with the production of antibodies opposite to gp70, capable of neutralizing the virus that can be eliminated within 6 to 8 weeks (CHARREYRE & PEDERSEN, 1991; JARRETT, 1999). The kitten are usualy protected by maternal antibodies until 6 weeks of age, with possible transitory infection, in case the animals have contact with the agent. After the viremia first phase there is often a seeming recovery of the animal, when the serological tests are usually negative. Nevertheless, the virus remains latent, and there are infected cells in the bone marrow and lymph nodes (COURCHAMP et al., 2000). In case of stressing situations for the animals, viral reactivation can occur, causing them persistent viremia. In this stage of infection, the animals do not produce immunological response opposing to the vírus, resulting in deaths within 3 or 5 years after the viremia. Only 30% of felines contract the persistent viremia form (SPAKERS, 1997).

The infirmity diagnosis became essencial in feline clinic, and its indication is not restricted to animals that present neoplasia (HAGIWARA et al., 1997), for three different reasons: FeLV causes immunodepression, the clinical manifestations are not specific, and there is risk of the agent dissemination among infected animals, mainly within populations of cats kept in confinement or groupings.

A way of diagnosing the FeLV is the use of monoclonal antibodies “anti-p27” marked with fluorescein in the peripheral blood circulation. Both blood and saliva infected cells have proteic particles of the excess viruses, and these particles are revealed by the formation of the marked immunocomplex. The Indirect Immunofluorescence method (IFA) is considered highly specific, and a positive result indicates that the bone marrow has been infected. In 1980, the ELISA test (Enzyme-Liked-Immunosorbent Assay) was introduced in hospital routine for FeLV diagnosis. This test is based on a research of viral antigens in blood plasma, tears, and saliva, whereas the IFA researches viral antigens or particles in leucocytes and platelets. The detected antigens are free in the analyzed samples, and the plasma is the elected bioligical material for the exam execution (SPARKES, 1997; ROBINSON et al., 1998).

Both IFA and ELISA are specific immunodetection tests that indicate the infection presence. There is 100% accordance between both tests in cases of negative reaction; however, the rate decreases to 90% when the reaction is positive. Because of that, animals that are positive for ELISA but do not show the suggested symptoms for the retroviremia should be reevaluated with IFA test, before a definitive diagnosis is stablished. The ELISA test precociously identifies antigens, and the positive animals can be transitorily viremic and extinguish the infection. The IFA test can show a false negative result if the animals have thrombocytopenia and leukopenia, what confirms the importance of the leukogram analysis in cases in which there is disagreement between the IFA and ELISA tests results (SPARKES, 1997; ROBINSON et al., 1998).

In the South region of Brazil, the studies that analyze the FeLV occurence in felines are rare. Because of that, considering this infirmity importance in the feline clinic as well as the risk of the retroviremia dissemination from a bearer feline, the objective of this study is to research the presence of FeLV in domestic, semi-domiciled felines residents in the cities of Pelotas

and Rio Grande.

MATERALS AND METHODS

We collected 120 blood samples of felines (71 males and 49 females) from 13 groupings containing at least 5 felines each. The groupings were located in the municipalities of Pelotas and Rio Grande, regions at the south of Rio Grande do Sul state. All of them presented precarious hygiene and sanitary conditions, with the constant entrance of new animals with free access to the outside of residences.

The feline blood samples were collected by radial vessel puncture after trichotomy and local disinfection with alcohol 70º. The total blood of each animal was centrifuged at 2000g, and the blood smear was performed from the leukocytes layer. The slides were stored under refrigeration, and sent to the Veterinary Virology Sector at Universidade Federal do Rio Grande do Sul (UFRGS) within 24 hours for the detection of FeLV through Indirect Immunofluorescence test (IFA).

Then the slides were set at room temperature in a mixture of 75% acetone and 25% methanol for 20 mimutes. After the slides dried at room temperature, the Indirect Immunofluorescence method (IFA) for FeLV was performed. The antibodies and the conjugates were comercially obtained (VMRD).

RESULTS AND DISCUSSION

The FeLV was detected in 38.3% (46/120) of the samples, being 27 males and 19 females. The microscopic analysis resulted in Green cytoplasmatic flourescence in leukocytes and platelets, indicating retrovírus infection (Figure 1).

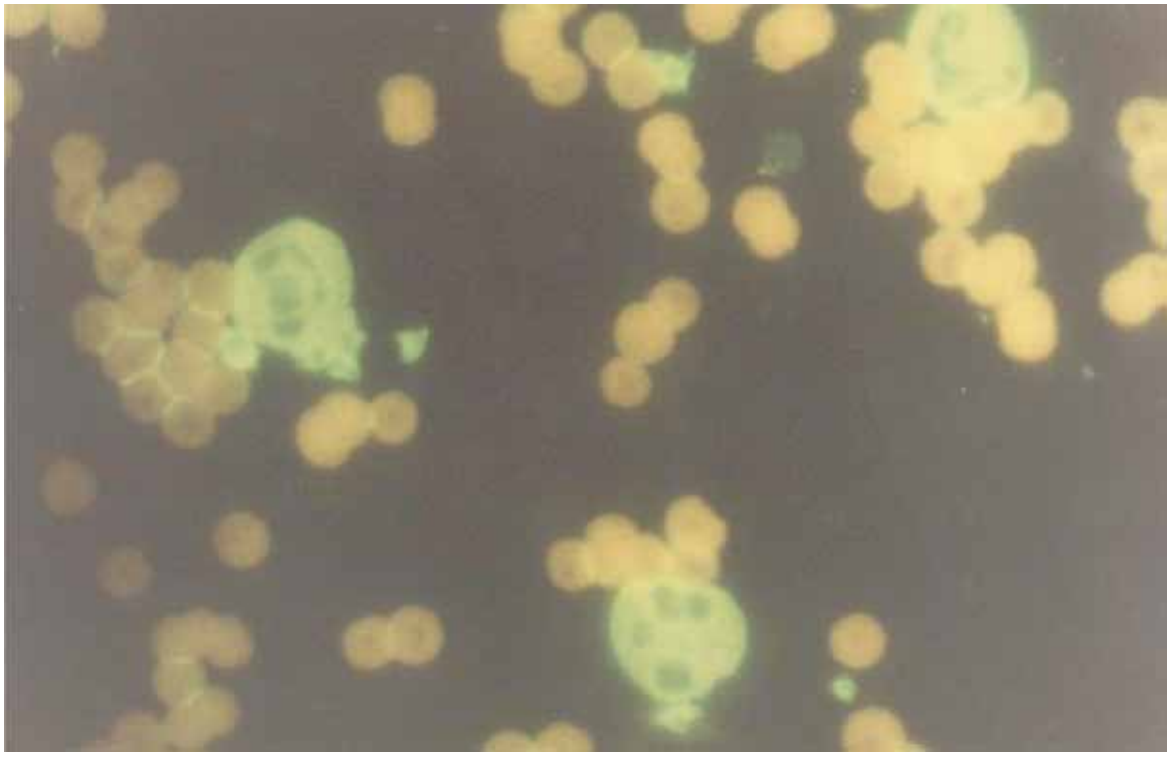

Figure 1 – Blood cells with green cytoplasmatic fluorescence, proving FeLV infection by Indirect Immunofluorescence method (100-250X). Virology Laboratory-UFRGS.

The frequency of FeLV found by this study was higher than the one found by other studies developed in Brazil that reported frequencies within 12.5% and 29.1% (HAGIWARA et al., 1997; COSTA et al., 2000). HAGIWARA et al (1997) used ELISA test as laboratorial method,

identifying animals with transitory viremia, whereas in the study with IFA it was possible to identify animals with persistent viremia. The high number of the retrovirus bearers may be due to the characteristics of the analysed groupings that were composed of unknown origin animals, with free life, and with constant entrance of new semi-domiciled animals. According to HAGIWARA et al (1997), the permanent contact among cats collected in the streets or obtained from other infected groupings facilitates the FeLV dissemination.

There was a numerical difference concerning the viremic animals sex, because we observed the number of infected males was greater than the number of infected females. Other researchers observed that the males are more susceptible to the retovirus, owing to the species habits, such as looking for females to mate and territorial quarrels, making possible greater contact among animals, hence the agent transmission (FROMONT et al., 1998; COURCHAMP et al., 2000).

CONCLUSION

We detected a high rate of FeLV positive animals in the studied region, concluding that the high FeLV infection rates constitute an imposrtant problem in the municipalities of Pelotas and Rio Grande, located in the south of Rio Grande do Sul state.

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