—NOTE—

Epizootiologic Survey of Feline Leukemia Virus in South-Kyushu Area

Masami MOCHIZUKI, Hiromasa NODA, and Hiroyuki OGAWA¹⁾

Laboratory of Veterinary Microbiology, Faculty of Agriculture, Kagoshima University, Kagoshima 890, and

¹⁾Department of Veterinary Surgery, Faculty of Agriculture, Miyazaki University, Miyazaki 889-21, Japan

(Received 28 January 1985/Accepted 10 April 1985)

ABSTRACT. Feline leukemia virus (FeLV) infection in pet cats of South-Kyushu area was investigated by using focus inducing assay for isolation of infectious FeLV from plasma and neutralization test for detection of antibody against FeLV of subgroup A. FeLV and neutralizing antibody were detected in 3.8% and 19.8% of cats, respectively.—**KEY WORDS:** cat, leukemia virus, neutralizing antibody.

Jpn. J. Vet. Sci. 47(4): 661–663, 1985

The feline leukemia virus (FeLV) is an exogenous retrovirus that can cause lymphosarcoma-leukemia complex (LLC) in addition to a number of non-neoplastic diseases such as anemia and glomerulonephritis in cats [2]. After exposure to FeLV, majority of cats may develop protective levels of neutralizing antibodies directed against antigenic determinants on gp70 and may eliminate the virus. Less than 30% of cats infected, however, do not mount an effective immune response and develop a lifelong persistent viremia. Those prognosis is very poor and the risk of dying of LLC and/or non-neoplastic diseases extremely high [2].

This brief communication describes the results of a diagnostic test of FeLV infection and sero-epizootiologic survey by demonstrating neutralizing antibody against FeLV in cats of South-Kyushu area, Kagoshima, Miyazaki and Ohita prefectures, during 32 months since May, 1982 till December, 1984.

A total of 80 plasma samples were tested to isolate infectious FeLV by focus inducing assay (FIA). Sixty-three and 17 samples were collected from diseased cats/their housemates and from apparently healthy cats, respectively. These samples were requested to be diagnosed whether FeLV was concerned in their disorders, or the clients were free

from FeLV as a periodic inspection, which were submitted by veterinary clinicians. Clinical signs of diseased cats were mainly anemia, leukocytosis, jaundice, inappetence, depression, fever or stunted growth. The method of FIA was the same as previously described by Jarrett, *et al.* [4]. Feline embryo cells of FEA strain [6], Moloney murine sarcoma virus-infected non-producer cells of c81 strain [1] and FeLV-A/Glasgow-1 strain as a positive reference used in FIA were presented by Prof. O. Jarrett, Univ. Glasgow Vet. School, Scotland. Before application to the field samples, FIA set up in the present study was applied to experimentally infected kittens to ascertain the test works properly. About 4-week-old conventional 9 kittens from 2 litters were injected intravenously with 2×10^8 focus inducing units of FeLV-A/Glasgow-1 strain and cats were monitored monthly for FeLV viremia by FIA. FeLV was recovered from all cats at the first examination of 4 weeks after the injection, but viremia of one cat was transient since no FeLV was detected from the examinations later on.

Three of 63 diseased cats/their housemates were FeLV positive by FIA. Two cats showed severe anemia (less than 10% of hematocrit in both) and one recovered from severe to

Table 1. Detection of neutralizing antibody against FeLV-A in cats

Type of cat	FeLV status	Number of cat tested	Number of cat with neutralizing antibody		
			<1:2	1:2-<1:10	1:10≤
Diseased	+	1	1	—	—
	—	47	38(80.9%)	5(10.6%)	4(8.5%)
	unknown	14	12(85.7%)	2(14.3%)	—
	Total	62	51(82.3%)	7(11.3%)	4(6.5%)
Healthy	+	0	—	—	—
	—	6	6(100%)	—	—
	unknown	33	24(72.7%)	6(18.2%)	3(9.1%)
	Total	39	30(76.9%)	6(15.4%)	3(7.7%)
Total		101	81(80.2%)	13(12.9%)	7(6.9%)

slight anemic status by aids of supportive treatments, however, it showed still FeLV positive when retested 10 months later and no neutralizing antibody was detected. The other cat died 3 days after the plasma sample had been submitted and leukocytosis was also observed. The remainder cat showing stunted growth was about 6-month-old and raised with a cat which died of lymphosarcoma being suspected clinically. None of 17 healthy cats was FeLV positive and in total, infectious FeLV was isolated in 3.8% of cats tested in the present study.

Neutralizing antibody was detected by the method of Russell and Jarrett [8]. FeLV-A/Glasgow-1 strain was adopted in the test since FeLV has been subdivided into subgroup A, B and C according to *in vitro* interference test based on the virion envelope glycoprotein gp70 [9] and, FeLV-A was monotypic by neutralization test and was found in all FeLV isolates [5, 7]. As shown in Table 1, 101 samples were applied and no significant difference was observed in prevalence of neutralizing antibody between diseased and healthy cats groups. Neutralizing antibodies to FeLV-A/Glasgow-1 strain were detected in 12.9% of cats under a range from 1:2 to less than 1:10 and in 6.9% of cats under a range of 1:10 or over. Overall, neutralizing antibody was positively detected in 19.8% of cats

tested in the present study.

These results show that FeLV infection has been also epizootical in pet cats of South-Kyushu area and its prevalency may be similar to those of Tokyo area, Japan reported previously [3]. Since FeLV is considered to be a primarily important pathogen causing severe illness and death in domestic cats and there is no prophylactic method available at the present, cats should be periodically tested to know their FeLV status regardless of whether they are diseased or healthy.

ACKNOWLEDGEMENTS. The authors wish to express their gratitude to Prof. Oswald Jarrett, University of Glasgow Veterinary School, Scotland for his kind presents of FEA, c81 and FeLV-A/Glasgow-1 infected FEA cells. This study was supported in part by a Grant-in-Aid for Encouragement of Young Scientist No. 58760223 from the Ministry of Education, Science and Culture of Japan.

REFERENCES

1. Fischinger, P. J., Blevins, C. S., and Nomura, S. 1974. *J. Virol.* 14: 177-179.
2. Hardy, W. D., Jr., Hess, P. W., MacEwen, E. G., McClelland, A. J., Zuckerman, E. E., Essex, M., Cotter, S. M., and Jarrett, O. 1976. *Cancer Res.* 36: 582-588.
3. Ishida, T., Kawai, S., and Fujiwara, K. 1981. *Jpn. J. Vet. Sci.* 43: 871-874.
4. Jarrett, O., Golder, M. C., and Stewart, M. F. 1982. *Vet. Rec.* 110: 225-228.

5. Jarrett, O., Hardy, W. D., Jr., Golder, M. C., and Hay, D. 1978. *Int. J. Cancer* 21: 334-337.
6. Jarrett, O., Laird, H. M., and Hay, D. 1973. *J. gen. Virol.* 20: 169-175.
7. Jarrett, O., and Russell, P. H. 1978. *Int. J. Cancer* 21: 466-472.
8. Russell, P. H., and Jarrett, O. 1978. *Int. J. Cancer* 21: 768-778.
9. Sarma, P. S., and Log, T. 1971. *Virology* 44: 352-358.

要 約

南九州地域におけるネコ白血病ウイルス感染症の疫学調査(短報): 望月雅美・野田浩正・小川博之¹⁾ (鹿児島大学農学部獣医学科家畜微生物学講座, ¹⁾宮崎大学農学部獣医学科家畜外科学講座)——南九州地域におけるネコ白血病ウイルス (FeLV) の流行状況を, focus inducing assay による感染性ウイルス検出と血清中和抗体の有無により調べた。80 例中 3.8% のネコが FeLV 陽性を示し, FeLV サブグループ A に対する中和抗体保有率は 101 例中 19.8% であった。