Retrospective Serosurvey for Feline Immunodeficiency Virus Infection in Japanese Cats

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We have previously reported a high incidence of feline immunodeficiency virus (FIV) infection in cats of Japan [4, 5]. Although the virus was first described in 1987 by Pedersen *et al.* in the United States [9], the chronic nature of this virus infection strongly suggests persistence of FIV in the domestic cat population long before the discovery as evidenced by British researchers [2].

Occurrence of immunodeficiency-like disorders in cats has been documented, and most were attributed to feline leukemia virus (FeLV) infection [1, 6, 8]. However, previous extensive testing for FeLV viremia in the diseased cat population in this country by one of the authors (T. I.) has only revealed a small fraction of sick cats (6.8%) persistently infected with FeLV [3], and unexplained chronic illness has been frequently experienced in the clinical practice situations.

In order to demonstrate evidence of FIV infection in the Japanese cat population before the discovery of the virus, we performed a retrospective serosurvey for FIV antibody using serum samples stored since 1980. As the serum samples, two different category sources were employed; one from stray healthy cats introduced into Institute of Laboratory Animals, Tokyo Women's Medical College from various animal control centers around Tokyo area, and the other from clinical cases visiting private animal hospitals in Tokyo. The former included 326 serum samples obtained during a period from 1980 to 1984. The latter group of 232 samples were collected in two hospitals during 1981 to 1985.

The demonstration of FIV antibody was carried out by indirect immunofluorescence at a serum dilution of 1:20 using infected cat lymphocytes as antigen, and all positive results were confirmed by Western blotting-ELISA procedure

with purified viral antigen as described earlier [4, 9]. The samples were all tested for FeLV antigen as well by ELISA with monoclonal antibodies to a core protein p27 [7].

Among the group of healthy stray cats, the antibody to FIV was first detected in the samples taken in 1980 (Table 1). In this year, the positivity was as high as the figure we reported for the healthy cat population obtained in 1987 [4]. In the following years, however, there was much variation in the positivity. A relatively high positive number was again noted in 1983. This variation may be related to the fact that cats were introduced from various locations from time to time. In spite of this variation, FIV antibody was detected throughout the survey period, suggesting the persistence of this virus in the cat population since 1980. The all 326 samples were negative for FeLV p27 antigen. The overall FIV positivity was 17/326 or 5.2%. The male to female ratio was 11: 7 although the total test population consisted of almost equal numbers of both sexes. The age of the positive cats were unknown. The positive cats were obviously all outdoor free-roaming cats of a relatively high risk for infection. The all cats tested were examined upon introduction and considered clinically normal. The positive cats also had been recorded as clinically normal and the selected hematologic test results were generally not out of normal ranges. Therefore, they were all considered to be healthy carriers of FIV.

In the hospital population, on the other hand, the antibody was first detected in the samples taken in 1982 (Table 1). The number of samples taken in 1981 may be too small for drawing any conclusion. The numbers of positive cats were small in early years, but a gradual increase was noticed in this group of cats in 1984 achieving a positivity of 12.9% in 1985. These samples were again all negative for FeLV viremia. These were obviously from sick cats visiting hospitals for

Table 1. FIV serology in healthy stray cats and hospital populations during a period from 1980 to 1985

Year	Stray Cats			Hospital		
	Tested	FIV positive(%)		Tested	FIV positive(%)	
1980	39	5	(12.8)			
1981	74	1	(1.4)	6	0	(0.0)
1982	73	3	(4.1)	31	1	(3.2)
1983	41	5	(12.2)	68	1	(1.5)
1984	99	3	(3.0)	63	4	(6.3)
1985				70	9	(12.9)

some medical problems, although no detailed history was available for each sample. This positivity in 1985 as a sick cat population was smaller than that we have reported for a greater number of samples collected in 1987 (44%) from sick cats visiting veterinary hospitals in Japan [5], which may reflect the difference in test population and in the size of the populations.

The above results present the evidence of FIV infection in this country as early as in 1980, and support the earlier finding that FIV has been around since 1975 [2]. It suggests that the virus had been in the Japanese cat population at least for some time before 1980 on the basis of the chronic tendency of FIV infection prior to the establishment of the carrier state [10].

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要 約

猫保存血清における猫免疫不全ウイルス抗体の検出(短報): 石田卓夫・谷口明子・金井孝夫¹⁾・片岡 泰¹⁾・相見和宏・荻谷和廣・鷺巣月美・友田 勇(日本獣医畜産大学獣医臨床病理学教室, ¹⁾東京女子医科大学実験動物施設, ²⁾東京都獣医師会)——東京近県より医学部実験動物施設に搬入された捕獲猫および東京都内の動物病院に来院した飼い猫より得られた血清のうち, 1980年初頭より保存されていたものについて, 猫免疫不全ウイルス抗体の調査を行った。その結果1980年より1985年までの血清で, いずれの年にも抗体陽性例は検出され, 本ウイルスが少なくとも1980年には日本に存在していたことがわかった。