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Rabies Surveillance in New Jersey in 1990

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1990년 뉴저지주의 광견병 유행에 관한 조사연구

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국문 초록

1989년 10월부터 뉴저지주에서 야생동물 광견병이 유행되기 시작하였다. 광견병이 의심되는 야생동물 및 가축을 광견병 항체항원 반응으로 검사하여 1990년 1월부터 1990년 12월까지 유행 진행 상황을 점검하였다.

그 결과를 요약하면 다음과 같다.

1. 야생동물 광견병 유행이 1년에 37mile 정도로 전파되었다.
2. 광견병으로 판명된 야생동물 중 Raccoon이 87%로 제일 많았고 Skunk가 6.4%였다.
3. 동물별 광견병 양성률은 Raccoon이 28.8%로 제일 높고 Skunk가 20.8%로 그 다음이었다.
4. 계절별 광견병 양성률은 1월에 11.4% 2월에 6.6% 9월에 21.0% 12월에 31.0%였다.

Introduction

During the 1930's and 1940's, New Jersey had an epidemic of rabies in dogs, and 4019 rabies cases, including 17 human cases, were reported. In 1942 a Rabies Control Program was initiated, and dogs were vaccinated against rabies and stray animals controlled. Since 1950, canine rabies has been virtually eliminated in New Jersey.[1]

In 1960 rabies in bats was first detected. To date, up to 5% of bats submitted to the state laboratory are positive for rabies. One cat in 1961, two raccoons in 1962 and 1966 were confirmed to be rabid in New Jersey.[2] The last human death in New Jersey occurred on 1971, and it was traced to a bat bite. Meanwhile, in the United States, nine people died of rabies in the five years 1978~1983.[3]

The current outbreak of rabies in wild animals was first detected in raccoons in West Virginia in 1977.[4] The disease has spread through Virginia, Maryland, Washington, D.

C., Delaware and Pennsylvania at a rate of approximately 25~50miles per year.[5] In October 1989, rabies in wild animals was first detected in New Jersey. In order to prevent an outbreak of rabies in human and domestic animals, and to reduce the spread of rabies in wild animals, a rabies surveillance program has been initiated by state and local governments in New Jersey.

Materials and Methods

Between January 1, and December 31, 1990, the New Jersey State Rabies laboratory sccepted animals involved in a human or domestic animal exposure for rabies testing in epizootic areas. Suspected rabid animals were submitted by local health officials, veterinarians, animal control officers and residents from areas within 10miles of the epizootic areas. Rabies antigen was identified in the animal's brain by direct immunofluoresence. Incidence rates were not calculated because the total animal populations were not known.

Results

A. Spread of Rabies in Epizootic Areas

In six months, from January 1 through June 30, 1990, rabid animals were found in areas 5 to 17miles from the already established rabies epizootic areas, and in the other six months, from July through December 1990, rabies spread to the areas as close as 7miles to as far as 30miles in all directions. In a year, rabies spread to areas as far as 37miles from the original epizootic areas. Fig. 1 depicts the epizootic areas.

B. Rabies in Wild and Domestic Animals

1. Table 1 shows the animals tested for rabies and positive rates. Raccoons are the most commonly reported rabid wild animals in New Jersey, accounting for 87% of all rabid animals. Rabies positive rate for raccoons tested was 24.8%(408/1,640), which is the highest. Skunks are the second most commonly reported rabid wild animals, accounting for 6.4%, and rabies positive rate was 20.8% and the positive rate is the second. Of 469 rabid animals, 458(97.7%) were wild animals, and the overall rabies positive rate for wild animals was 19.5%(458/2,346).

2. Of eight hundred and forty five domestic animals tested, eleven were positive for rabies, and the positive rate for cats was 1.0%(8/806), which is the highest in domestic animals tested.

3. Rabid animals were found throughout the year. The positive rate(31.1%) in December was the highest and the rate in September

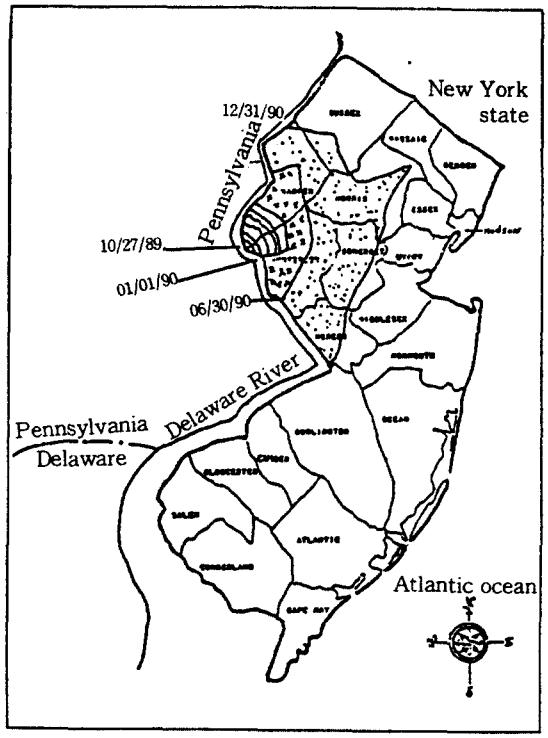

Fig. 1. Spread of rabies in 1989, 1990.

Table 1. Rabies cases in domestic and wild animals - 1990

	Animals	No. of animals tested	No. of rabies positives	Percent of rabies positives
Domestic animals	Cat	806	8	1.0
	Rabbit	27	1	3.7
	Sheep	6	1	16.7
	Cow	6	1	16.7
Subtotal		845	11	1.3
Wild animals	Raccoon	1,640	408	24.8
	Bat	324	9	2.8
	Ground hog	165	8	4.8
	Skunk	144	30	20.8
	Fox	58	1	1.7
	Deer	15	2	16.7
Subtotal		2,346	458	19.5
Grand total		3,211	469	14.6

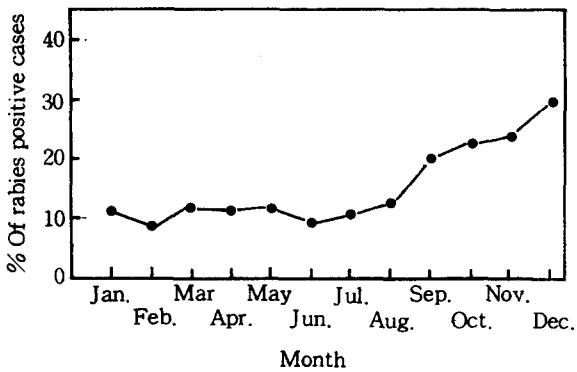

Fig. 2. Percent of rabies positive cases of animals tested in New Jersey by month. 1990.

was the second, and in February, the rate was the lowest(Fig. 2).

Discussion

The terrestrial or land dwelling animal rabies sperad through Virginia, Maryland, Washington, D. C., Delaware and Pennsylvania at a rate of approximately 25~50miles a year. In New Jersey, the disease has spread at a rate of 37miles a year. The rate is not significantly different from those of other states.[6] Rabies entered North East counties in Pennsylvania in January, 1989, but rabies cases in wild animals were not found in New Jersey until late October 1989. There is a river(the Delaware river) which separates Pennsylvania from New Jersey and this river might serve to slow down rabies epizootic in New Jersey.

It is not known how the first confirmed rabid animal(reccoon) was infected. However, there are two possibilities. The first one is that rabid raccoon or raccoons were translocated by people. The second possibility is that rabid animal or animals crossed the river in the upper stream which is narrower than the lower stream. In southern New Jersey, where the river is much wider, no confirmed rabies cases have been reported.

It is assumed that the focal epizootic was in a tip of Warren County, from which the epizootic spread in all directions. In spring and summer, the rabies positive rates were 6~14.5 % but in the latter four months of the year, the rates were increasingly higher. This rate increase is attributed to selective specimen submitted to the laboratory in epizootic areas. It is also assumed that greater number of animals have been exposed to rabid animals as

the epizootic has spread. The raccoon was the predominant wild animal affected with rabies, and the rabies positive rate for raccoons was the highest, 28.8%, edging out the rate for skunks, which was 20.8%.

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Abstract

Terrestrial animal rabies surveillance was begun in New Jersey in 1990, in order to monitor rabies epizootic in wild terrestrial animals and to prevent an outbreak of rabies in humans and domestic animals. A total of 3,211 rabies suspected animals were captured and tested by direct immunofluorescence method.

In a year, rabies spread to areas as far as 37 miles from the original epizootic areas. Raccoons were the most commonly reported rabid wild animals, accounting for 87% of all rabid animals. Rabies positive rate for raccoons was 24.8%(408/1,640). Skunks were the second most reported rabid wild animals, accounting for 6.4%, and positive rate was 20.8%. The overall rabies positive rate for wild animals was 19.5%. Of domestic animals, cats were the most commonly reported animals, and the positive rate was 1.0%.

Rabid animals were found throughout the year. The positive rate in December was the highest(32.1%) and the rate in February was the lowest(9.0%).