Tactics for the control of wildlife rabies in Ontario (Canada)


Summary: Two different tactics are currently being utilized to control rabies in foxes, skunks and raccoons in Ontario, Canada. The first tactic, which involves live-capturing with cage-traps and vaccinating by intramuscular injection, was successful in immunizing 54%-72% of the skunk and raccoon populations in a 60 km$^2$ area of Toronto, Ontario. This area has been free of rabies for two-and-a-half years.

The second tactic, involving the distribution of baits containing modified live-virus (ERA) rabies vaccine, was implemented to control rabies in foxes in both urban and rural areas of Ontario. In Toronto, 50% and 63% of the foxes were vaccinated during 1989 and 1990, respectively. Over the same period, 45% and 61% of the foxes in a 30,000 km$^2$ area of south-eastern Ontario were immunized. Rabies is declining in both of these areas.

A contingency plan has been devised to control an epizootic of raccoon rabies which is threatening to invade Ontario from the United States of America.


Rabies is currently enzootic in urban and rural areas of southern Ontario, Canada. Between 1,400 and 3,600 cases are reported annually, with the majority (65%) of diagnoses occurring in red foxes (Vulpes vulpes) and striped skunks (Mephitis mephitis) (3, 5). Each year, approximately 2,500 people receive rabies post-exposure treatment due to contact with potentially rabid animals. An epizootic of raccoon rabies originating in the south-eastern United States of America will soon enter southern Ontario. This is significant as raccoons are very abundant in southern Ontario, especially in cities (8).

The Ontario Ministry of Natural Resources (OMNR) is currently employing a variety of tactics for the control of rabies in wildlife in urban and rural areas of southern Ontario. To combat rabies in urban skunks, raccoons (Procyon lotor) and foxes in a 60 km$^2$ area of metropolitan Toronto, personnel from the OMNR Rabies Unit have been utilizing two different tactics.

The first tactic, which is directed towards skunks and raccoons, involves live-capture with cage traps, vaccination by intramuscular injection with an inactivated virus rabies vaccine (Imrab) and release at the point of capture (6, 7). Although this method is very
labour intensive (four technicians were employed for four months to trap the 60 km$^2$ area), between 54% and 72% of the skunk and raccoon populations were immunized between 1987 and 1990 (excluding 1988, when the entire area was not trapped). Presently, it appears that skunk rabies has been successfully controlled in the study area. Only three cases have been diagnosed since January 1987, instead of an expected thirty cases (based on the past prevalence of rabies in the area). In addition, an outbreak of rabies in skunks in the spring of 1991 failed to penetrate the vaccination area.

This tactic is serving as a temporary method for rabies control in skunks and raccoons. Future plans call for a vaccine-bait system for oral immunization in these two species. Vaccines for these species are now under laboratory test.

While live-capture and vaccination by injection may be a feasible method of rabies control in skunks and raccoons in urban areas, a different tactic must be employed to control rabies in urban foxes as they are much more difficult to capture. As approximately 1,000 foxes are found in or associated with the major ravine systems of metropolitan Toronto, tallow baits have been distributed containing a liquid modified live-virus (ERA) rabies vaccine to control rabies in this species (1, 4). Approximately 53,000 vaccine baits were hand-placed during June and November of 1989 and 1990 and June of 1991. Baiting took place in June to target young and adult foxes at pup-rearing den sites, and in November to vaccinate foxes immigrating into Toronto from the countryside where vaccination is not currently practised. Based on the presence of tetracycline in the teeth and rabies antibody in the blood of trapped foxes, it is estimated that 50% and 63% of the foxes were vaccinated during 1989 and 1990 at a baiting density of 49-69 baits/km$^2$. Only two cases of rabies in foxes have been diagnosed in metropolitan Toronto since the vaccination program started in June 1989. Based on the past incidence of the disease, over 20 cases would have been expected.

The size of the rabies endemic area in rural southern Ontario is approximately 100,000 km$^2$. Obviously, any attempt at rabies control through live-trapping and vaccination by injection or through distribution of baits by hand is impractical except in certain circumstances (placement of vaccine baits at fox dens). Therefore, experiments have been performed which involve aircraft distribution of rabies vaccine (ERA) baits (1, 2, 4). During the autumn of 1989 and 1990, 800,000 vaccine baits were air-dropped over an area of approximately 30,000 km$^2$ in south-eastern Ontario. Through detection of tetracycline in teeth and rabies antibody in blood serum from foxes submitted by trappers, it was estimated that at least 45% and 61% of the fox population was immunized during the vaccination campaigns in 1989 and 1990 respectively.

This 30,000 km$^2$ zone of eastern Ontario was selected as the test vaccination area because the rabies cycle in foxes there has been fairly predictable for the last thirty years. If the vaccination program is effective in controlling rabies, there should be a significant decline in rabies prevalence over time. The critical period will be the winter of 1991-1992.

A contingency plan has been devised to detect and control raccoon rabies if it enters southern Ontario from the United States of America. Should raccoon rabies become established in southern Ontario, an extensive communication program is planned to alert the public to potential health risks. The plan also involves alerting border personnel so as to discourage the importation of raccoons into Ontario. A Raccoon Rabies Task Force has been formed to design tactics for control of the disease. Propositions include population reduction around isolated raccoon rabies cases and the formation of a buffer zone of vaccinated animals by live-capture with cage traps and
vaccination by injection. A human-adenovirus rabies recombinant vaccine is currently being prepared, which can be used to vaccinate raccoons orally once a feasible bait and vaccine container has been designed.

* *


Résumé: Deux méthodes différentes sont actuellement appliquées pour lutter contre la rage des renards, des mouffettes et des ratons laveurs en Ontario (Canada). La première, qui consiste à capturer les animaux vivants dans des cages et à les vacciner par injection intramusculaire, a permis d’immuniser 54 % à 72 % des populations de mouffettes et de ratons laveurs sur une surface de 60 km², à Toronto (Ontario). Il y a deux ans et demi que cette zone est indemne de rage.

La seconde méthode, qui consiste à poser des appâts contenant un vaccin antirabique préparé avec le virus vivant modifié (ERA), a été utilisée pour lutter contre la rage des renards, aussi bien dans des régions urbaines que dans des régions rurales de l’Ontario. À Toronto, 50 % des renards ont été vaccinés en 1989 et 63 % en 1990. Pendant cette même période, 45 % (1989) et 61 % (1990) des renards ont été immunisés sur une surface de 30 000 km², dans le sud-est de l’Ontario. La rage est en déclin dans ces deux régions.

Un plan d’urgence a été conçu pour lutter contre une épidémie de rage des ratons laveurs en provenance des États-Unis d’Amérique qui menace d’atteindre l’Ontario.


* *


Resumen: Actualmente se aplican dos métodos para luchar contra la rabia de los zorros, mofetas y mapaches en Ontario (Canadá). El primero, que consiste en capturar los animales vivos en jaulas y someterlos a vacunación intramuscular, permitió inmunizar entre 54% y 72% de las poblaciones de mofetas y mapaches en una superficie de 60 km² en Toronto (Ontario). Hace dos años y medio que la rabia desapareció de la región.

El segundo método, que consiste en poner cebo que incluyen una vacuna antirrábica preparada con el virus vivo modificado (ERA), se utilizó para luchar contra la rabia de los zorros en zonas tanto urbanas como rurales de Ontario. En Toronto, 50% de los zorros fueron vacunados en 1989 y 63% en 1990. Durante el mismo período, 45% (1989) y 61% (1990) de los zorros
fueron inmunizados en una superficie de 30.000 km$^2$ al sudeste de Ontario. La rabia está disminuyendo en ambas regiones.

Se preparó asimismo un plan de urgencia para controlar una epizootia de rabia de los mapuches proveniente de los Estados Unidos de América que podría alcanzar a Ontario.


* * *

REFERENCES


