SESSION 4: UPDATE ON VIRAL ZOONOTICS

Chair: Dr. Lilian Waiboci.

Organizer: *Dr. Lilian Waiboci.*

ORAL PRESENTATIONS

1. Rabies in Kenya

Abstract

Rabies has been known in Kenya for a long time. The first laboratory confirmed rabies case in the country occurred in 1912 in a dog near Nairobi while the first human case was in a woman from South Nyanza in 1928. Records at the Central Veterinary Laboratories in Kabete show that Kenya experienced rabies outbreaks in the early 1930s, later 1940s and early 1950s. However, widespread vaccinations of dogs in the 1950s and 1960s effectively controlled rabies so that by 1973, the disease was virtually eliminated from the country, except for a persistent foci of infection in the Machakos and Kitui districts. Following an outbreak of the disease in 1974 in Taita/Taveta District and another one in 1979 in the Trans Mara District, the rabies situation changed dramatically in the country since then. To date, rabies is more widespread and prevalent than at any time in its history.

In Kenya, like in most of the developing world, the domestic dog is the major reservoir and transmitter of rabies to man. Rabies control in the country which includes the traditional mass vaccination of dogs, movement restriction, and control of 'stray' dogs has failed. The major constraints to the effective control of rabies in the country are economical and logistical, rather than technical, with poor infrastructure and inadequate resources hampering control programmes. In addition, economic as well as epidemiologic data necessary to convince policy makers of the importance of rabies as a public health problem are lacking in the country. Also lacking are dog ecology and demography data long recognized a prerequisite for the proper planning and execution of sound rabies control programmes.

In response to this situation, a one-year community-based active surveillance for rabies was initiated in six randomly selected sub-locations in Machakos District where rabies has been endemic since the 1950s and persisted even when the disease was well controlled in the rest of the country. Furthermore, a dog ecology and demography study was conducted in the same district during the period 1992- 1993. By combining the epidemiologic and dog ecology and demographic data, models were developed to explain the occurrence of rabies in the district and to compare alternate control options.

The community-based active surveillance reviewed that the current passive surveillance grossly under-estimated rabies as a public-health problem in Machakos District. Approximately 860 rabid dogs per 100 000 dogs were confirmed in this study compared to 12 per 100 000 confirmed rabid dogs reported by the existing passive surveillance system. Dogs accounted for 81% of the confirmed animal-rabies cases. The annual incidence of animal-bites of humans was 234 per 100 000 people and the point estimate of human-rabies incidence per year was 25 per million people. Almost all (97%) animal-bites of humans were due to dogs. The dog ecology and population data showed that the Machakos dog population was growing at 9% per annum (95% C.I 4 – 14%), highly dynamic with a rapid population turnover (half the dogs were less than a year old), poorly supervised, and inadequately vaccinated against rabies as only 29% of surveyed dogs had rabies antibodies considered protective. Model results predicted that an annual vaccination that covered 70% of dogs was required for effective control. If the frequency was increased to twice per year, the coverage could fall to 55-60%.

In conclusion, this study showed that community-based active surveillance can provide a potential cost-effective strategy for greatly improving estimates of rabies incidence and epidemiology to inform veterinary and policy decision-making. The main implication from the dog ecology and demography data is that adequate vaccination coverage is unlikely to be achieved, even under optimal delivery, using the current strategy of annual vaccination of dogs older than 3 months. There is a need to test the model predictions by means of field trials with the community as the unit of focus.

2. Rabies in Kenya

Abstract

Dr. Joe Macharia

Rabies in Kenya is most prevalent in dogs, followed by livestock (cattle, sheep, goats, pigs), cats, wildlife and man in decreasing order. Domestic dogs, therefore, remain the principal vectors for rabies. Although the disease still remains endemic in all districts, quantification of the actual disease incidence is made impossible due to lack of hard data. The information on the real distribution of rabies cases among species is critical to the development of effective control programmes.

Further, the incidence of human rabies cannot be estimated accurately, again due to lack of useful data. In Kenyan hospitals, a patient is suspected to have rabies only on the basis of animal (dog)-bite history and the observed symptoms. Laboratory confirmation of human rabies diagnosis is supposed to be done at the Central Veterinary Laboratories Kabete but human specimen for rabies confirmation are rarely received, sometimes only one or two specimen in five years.

A study carried out in Machakos District estimated a human dog-bite prevalence of 40 per 100000 people in 12 months (Kitala et.al., 1993). With Kenya's total human population estimated in 1999 at 30 million, this translates into approximately 12,000 human dog-bites nationally per year, assuming that the human dog-bite prevalence is the same in all districts. Assuming that only one-sixth of these dog bites result in clinical rabies in humans, then roughly 2,000 Kenyans die of rabies every year.

Scientific studies and reports in international scientific fora indicate that rabies will only be eradicated by first eradicating it in animals. However, the major reason why rabies control activities in animals are inadequately funded, even by the World Health Organisation (WHO), is because in many countries, including Kenya, the incidence of rabies in man is grossly underestimated and hence rabies is ranked rather low among the diseases of most economic public health importance. Animal rabies control programmes will only get the attention that they deserve when, first and foremost, the actual incidence in humans is determined.

From the foregoing, it is clear that there is an urgent need to strengthen the liaison between the medical and veterinary professions as regards control of rabies and possibly other zoonotic diseases.

This paper describes some significant epidemiological and control aspects of rabies in both animals and humans in Kenya and emphasizes the critical need for closes liaison between medical, veterinary and even wildlife authorities to develop strategies on how to tackle rabies on a common front.

Reference

1. Kitala, P.M., McDermott, J.J., Kyule, M.N. and Gathuma, J.M. (1993). Features of dog ecology relevant to rabies spread in Machakos District, Kenya. Onderstepoort Journal of Veterinary Research. 60: 445 - 449.

SESSION 4: POSTER PRESENTATIONS

1.Detection of Avian Influenza Among Wild Birds in Kenya, 2006 -2009.

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Abstract:

Background: Migratory Birds play an important role in the movement of avian influenza (AI) throughout the world. Kenya, which to date has not reported a case of AI in humans or animals, is part of the bird migratory flyway from Europe and Western Asia.

Objective: To determine what subtypes of avian influenza viruses are harbored by wild birds in Kenya.

Methodology: At 13 flyway sites, birds were captured by ornithologists. Biometric parameters were recorded and each bird banded. Duplicate cloacal swabs were collected, placed in cryovials containing viral transport medium, and screened for influenza A by real-time RT-PCR. All positive Influenza A specimens were further screened for the H5 subtype. Sequencing was done to determine if the strain is highly pathogenic.

Results: Specimens were collected from 3,618 birds representing 150 species. Influenza A virus was detected in 1.7% (61/3618) of the all birds representing 23 different species. Of the 61 Influenza A virus positives 34% were from resident birds, 34% from paleartic migrants and 32% from intra African migrants. No highly pathogenic avian influenza viruses were detected during the study period. However, 1 low pathogenic avian influenza virus (LPAI) H12N2, 1 LPAI H5N8 and 2 LPAI H5N2 subtypes were detected in 4 bird specimens.

Conclusions/Recommendations: The implementation of active surveillance has identified influenza A subtypes among wild birds in Kenya. The discovery of influenza virus in both migratory and resident birds reinforces the probability of the potential transmission between migratory and resident birds. This effort has built local capacity for the expert collection and analysis of bird samples for influenza and has given animal and public health experts a baseline of influenza virus activity in birds. This surveillance has the potential to function as an early warning system for HPAI.