HUMAN RABIES SURVEILLANCE AND CONTROL IN ETHIOPIA

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1 INTRODUCTION.

Politically and historically, Ethiopia is highly distinctive among African countries because it has existed as a nation in some form for more than two thousand years. Within the country, rabies has been known for centuries as a “Mad Dog Disease”. In other countries where canine rabies is endemic the rate of human cases is about 1 per 100,000 population, with some of the higher rates reported in India (25,000-50,000 cases, or 25 to 50 per 100,000 people). In Ethiopia, the incidence of human rabies, as in many developing countries, closely parallels the incidence of rabies in dogs and, to a much lesser extent, wildlife; about 98% of human cases are due to dogs, much of the remainder to other domestic animals. In a recent survey in Addis Ababa and its environs, only a small proportion of the total cases, less than 2%, was due to wildlife. At present, the institute that is carrying out diagnosis and vaccine production is the Ethiopian Health and Nutrition research Institute (EHNRI).

2 RABIES SURVEILLANCE IN ADDIS ABABA.

In 1992/1993 human rabies in Addis Ababa, the capital city of Ethiopia, was surveyed and 464 rabies cases were identified. Of these, 52 (11%) were diagnosed at EHNRI and then reported to the WHO in the annual World Survey of Rabies. The remaining 412 cases (89%) were not reported to the Veterinary Public Health Division of WHO but to another division within the WHO by the Ethiopian Ministry of Health. Most of these cases were diagnosed by clinical observation of classical signs of rabies such as hydrophobia, paresthesia at the site of the bite, difficulty swallowing water and a history of a bite by a known or suspected rabid animal. Approximately 50% of the cases were adults (between 15 and 44 years of age) and approximately 60% were males. Over 98% of cases had a history of a bite by a rabid or suspected rabid dog.

The 1992/1993 Addis Ababa data on human rabies cases was extrapolated to estimate the actual magnitude of human rabies throughout Ethiopia by using an assumption that there is a uniform distribution of dog rabies and of human exposure and cases throughout the country. Thus, with an estimated 1993 population of 2.5 million in Addis Ababa and an estimated countrywide population of 55 million people, we estimate that approximately 10,000 persons die of rabies in Ethiopia each year, and that more than 40,000 persons may require human rabies post-exposure treatment (PET). Although the EHNRI distributes about 6,000 doses of Fermi vaccine, it was estimated at only approximately 13% of the total amount required. From these figures we estimate the incidence of human rabies in Ethiopia to be one of the highest in the world, at 18.6 cases per 100,000 people.

Since 1995 we have again collected data on human rabies in Addis Ababa and its environs (a cordon of about 80 to 100 km radius around the city) and we have reviewed records of patients referred with a diagnosis of rabies to the EHNRI and the rabies reference hospitals in Addis Ababa. Demographic, clinical and animal-type information was collected on standard questionnaire forms. We have identified 275 human rabies cases of which 268 (97.5%) were due to dog bite (the remaining cases were caused by foxes and viverrids (civet)). Of the 275 cases, 13% were bitten on the head, 34% on the upper extremities (hand and arm), 3% on the trunk and 46% on the legs.

The mean incubation periods ranged between 15 and 365 days, the shortest being in two eight and thirteen year old boys bitten on the face and the longest also being in one eight year old boy bitten on the leg. Forty percent of the victims were children under fifteen and of the cases bitten on the face, 61% were also children under the age of fifteen. An additional 17% were between fifteen and twenty five, giving a total of 78% of the victims being under twenty five. Of the remainder, 12% were over forty

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years of age. The most unusual cases observed were two of human to human transmission of rabies and one due to exposure to a rabid bovine.

Our findings confirm that rabies is indeed a major problem and continues to exact a tremendous toll on the meagre public health resources of the country.

3 Prevention and Control Efforts.

The prevention efforts will entail the immediate institution of 25,000 doses of cell culture vaccine for human rabies post-exposure treatment (PET) kindly donated by Pasteur Merieux and training and technology transfer for host country vaccine production and utilisation. EHNRI has ample space and trainable personnel to be able to produce adequate and of acceptable quality of human and animal vaccines, with limited amount of short term expertise support for transfer of technology.

4 Control.

As evident during the last 50 years in the industrialised world and recently in parts of Latin America (e.g., Uruguay) and south-east Asia (e.g., Thailand), human and animal rabies prevention in major urban areas is achievable. The expected impact and long-term plan of this project is to establish vaccine production capability to not only meet the national needs of Ethiopia but also to provide a model to supply other African countries in the region.

5 Objectives.

Implement hospital-based human rabies prevention in Addis Ababa using cell culture vaccine.

Establish cell culture and rabies vaccine production capability in Ethiopia and train personnel in phases of production and quality control assessment of rabies vaccines for humans and animals.

Employ a distribution system to assure that requirements for human post exposure vaccine are met throughout Ethiopia.

Organise and conduct rabies immunisation programmes in dog populations in Addis Ababa and evaluate the impact of these campaigns on subsequent human PET and human rabies cases.

Expand the urban prevention plan to rural areas.