



SOUTH PACIFIC COMMISSION

RABIES



Dog in final stages of rabies infection, showing excessive salivation resulting in frothing at the mouth as a result of the inability to swallow. The animal is very sensitive to external sounds or light and the eyes are fixed.

RABIES, also known as *La rage* and *hydrophobia*, is a viral infection of all mammals which is transmitted in the saliva of a 'rabid' animal. Infection with the virus almost always results in a fatal inflammation of the brain or encephalomyelitis.

Distribution

Rabies occurs throughout the world with the exception of the Pacific Islands, Australia, New Zealand and a number of other countries which are islands or have short land boundaries.

Rabies is recognised as a significant public health problem in a number of countries in Asia, where every year the disease is known to cause the death of thousands of people following bites by infected dogs.

Infection

Rabies is a viral disease caused by a *Lyssavirus* which is a member of the Rhabdovirus group. There are a number of types of *Lyssavirus* which cause disease, of which three are known to be fatal to humans. Most important among these is the classical rabies virus.

All species of mammal, including man, are believed to be susceptible to rabies. The main hosts for the virus are the carnivores (including dogs and cats) and bats. Rabies is not usually a major disease of food animals, with the exception of cattle in Latin America.

Two distinct forms of rabies are

recognised: a *sylvatic* form, where the virus circulates among the wild population, and an *urban* form, where the dog is usually the host in which the virus is maintained.

The possible introduction of rabies into most countries in the Pacific could lead to the establishment of reservoirs of infection in the stray dog populations or, in the case of Fiji and Hawaii, it is possible that the disease could become established in the mongoose population.

Transmission

The virus is excreted in the saliva of an infected animal, starting approximately two days before clinical signs are seen and continuing until the death of the animal. On very rare occasions, dogs may survive infection with rabies and may continue to excrete virus in the saliva for some months without showing any symptoms of the disease.

Transmission usually occurs when infected saliva enters the body through a break in the skin as a result of a bite or saliva coming in contact with an open cut or, in some cases, via the conjunctiva of the eye.

Following entry into the body, the virus travels along the nerve fibres to the brain and salivary glands.

Clinical signs

The incubation period for rabies can vary considerably. It is usually between 20 and 60 days, however periods of up to

one year have been recorded. This variation in time is largely dependent upon the distance the virus must travel from the point of entry to reach the central nervous system.

The clinical stage of the disease, when symptoms are apparent, lasts between 2 and 10 days, during which three distinct phases are seen. These are described as the *prodromal*, *excitative* and *paralytic* phases. If the excitative phase is more apparent, the animal is described as having 'furious' rabies. If the paralytic form is dominant, the animal is said to have 'dumb' rabies.

The clinical signs during the *prodromal* phase are primarily recognisable as a change in the temperament of the animal. In the case of dogs, a quiet, friendly animal may become aggressive and a vicious animal can become friendly.

During the *excitative* phase, dogs become sensitive to bright lights and noises and may bark without cause. Voice changes are common, often associated with continuous 'calling' and teeth grinding. Domestic and non-domestic animals lose their fear of man and may attack without warning. When cattle and horses are infected, they become restless and display symptoms which may be mistaken for colic.

During the *paralytic* phase, the animal becomes quiet as paralysis of the muscles spreads throughout the body. Paralysis of the tongue and the muscles of the jaw prevents swallowing, resulting in profuse salivation. Death usually follows.

Diagnosis

Diagnosis is based on the clinical signs and can be confirmed after death by laboratory tests on brain tissue. The head of the dead animal should be placed on ice and forwarded whole to the nearest diagnostic laboratory. However, due to the serious nature of the infection it is strongly recommended that the laboratory be advised in advance and qualified assistance obtained.

Differential diagnosis

A number of conditions may produce symptoms in dogs which resemble classical rabies. Among these are Aujeszky's Disease (Pseudo-rabies), which is known to be present in a number of Pacific Island countries, and poisons which produce salivation.

Control

The disease in dogs (the commonest source of human infection) can largely be controlled by controlling stray dogs and through the widespread use of vaccination. If the disease was not transmissible to humans, the importance of rabies would be much reduced.

If a rabies case is suspected, immediate controls on the movement of livestock should be introduced and a public awareness campaign instituted. It will be necessary to ensure that all dogs are restrained and possibly muzzled. In some circumstances stray dogs will need to be eliminated through shooting or poisoning.

Prevention

The main concern of most rabies-free countries is to prevent the introduction and establishment of the disease. This is achieved by applying strict controls to the importation of potential carriers.

There are a number of different regimes employed by different countries to prevent the introduction of rabies. These vary from a total ban on the imports of live animals from countries other than those known to be free from rabies to the use of vaccination and quarantine to ensure animals are disease free.

The development of a blood test has enabled importing countries to confirm that an animal has been protected by vaccination.

Few Pacific Island countries have adequate quarantine facilities to risk the importation of an animal which may be incubating rabies.

A particular risk to Pacific Islands is the possible introduction of a diseased animal into a country, on a yacht or fishing vessel, without the knowledge of the health or quarantine services.

Treatment

There is no treatment for rabies.

Public health considerations

The Pacific Islands would be particularly susceptible to an outbreak of rabies due to the almost total lack of knowledge among the population of the dangers of human infection. There are also no provisions for the supply of vaccines in the event of an outbreak or exposure.

This leaflet was prepared by Peter Saville, Animal Health Adviser, South Pacific Commission, Suva, Fiji, from whom further information can be obtained. Peter Walton, Information Specialist, Pacific Regional Agricultural Programme, assisted with layout and production of this leaflet. The photographs were provided by the Australian Quarantine and Inspection Service.

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