

RABIES

By Lawrence A. Rebecchi Jr., VMD

Descriptions of rabies go back thousands of years, as rabies has classically been one of the most feared infections of all time. It is caused by a rhabdovirus which is relatively unstable in the environment, requiring fresh contact with mucous membranes to establish infection. In most cases, disease is transmitted via bite wound.

COURSE OF THE DISEASE

Virus present in the infected animal's saliva enters the victim's tissues during the bite. The virus attaches to the local muscle cells for a couple of days before penetrating to local nerves and beginning its slow ascent to the brain. Once within nervous tissue, the virus is not accessible to the immune system and may safely proceed, though the journey is slow taking up to one year (average time between bite and detectable virus in the brain is 20-30 days). Virus ultimately reaches the brain and in two to three days more is evident in all body secretions including the saliva. At this point, the disease becomes transmissible and symptoms begin.

PRODROMAL STAGE

(The first 1 and 1/2 days after symptoms have started) - A change in personality is noted. Friendly animals become shy etc. The larynx begins to spasm and a voice change may be noted (especially true in rabid cattle).

EXCITIVE STAGE

(Next 2-3 days) Classically, this would be the "mad dog" stage. The animal has no fear and suffers from hallucinations. The larynx is paralyzed resulting in an inability to swallow thus drooling and "foaming at the mouth" result.

PARALYTIC OR DUMB STAGE

(Next 2 days) Weakness/paralysis sets in. The animal dies when the intercostal muscles (which control breathing) are

paralyzed. It is from animals in this stage where most human exposure occurs. There is no treatment for animals or humans once clinical signs appear.

Once the virus has been released to body secretions, it is again accessible to the immune system; however, the patient dies before an adequate immune response is mounted.

TRANSMISSION EPIZOOTIOLOGY

The reservoir for this virus consists of wildlife species. Humans and domestic animals are not generally exposed unless conditions promoting contact with wildlife occur. In California, the chief reservoir species for rabies is the skunk. In other areas raccoons, bats, and foxes are also important. Rodents and birds are considered resistant. Transmission is usually achieved via bite wound; however, humans have been infected by inhaling aerosolized bat urine while visiting bat-infested caves. Recently, a human was infected via corneal transplant from a deceased wildlife ranger. Not every bite wound from a rabid animal is infectious. Whether or not infection sets in depends on the number of viral particles entering the wound (how much saliva contacted the victim, whether the bite was through clothing etc.)

THE LAW REGARDING ANIMAL BITES IN OUR AREA

If the biting animal has been legally vaccinated against rabies, only routine first aid may be necessary; bacterial infection of the wound may still be possible. If the animal has not been currently vaccinated, it must be confined for ten days at the owner's expense for observation and then vaccinated at the end of that period.

The purpose of the ten day period is to

determine if rabies virus could have been in the animal's saliva at the time of the bite. An animal infected with rabies and shedding virus will certainly be dead within ten days. If the biting animal is known to have been exposed to wildlife, the situation is different. A vaccinated animal must be re-vaccinated within forty eight hours and confined for observation for thirty days. Unvaccinated animals must either be confined for six months or be euthanized and tested for rabies. All bites that break the skin are reportable to the health department. All dogs must be vaccinated against rabies. Wildlife/pet incidents leading to bites on the pet are of no concern to public health officials as long as no humans have been bitten.

LAWS REGARDING BITING DOGS AND RABIES VACCINATIONS ARE HIGHLY REGIONAL. CHECK WITH YOUR LOCAL ANIMAL REGULATION DEPARTMENT OR VETERINARIAN TO FIND OUT WHAT YOU NEED TO KNOW.

IF YOU ARE EXPOSED

A fresh bite wound should be washed out with water quickly as this may wash out viral particles. The time it takes for the virus to reach the brain depends on the amount of virus present in addition to the proximity of the wound to the head.

If possible, the head of the biting animal is submitted to the health department for fluorescent antibody testing for the rabies virus.

This process takes a matter of hours so that any bite victims can know right away if they will require rabies treatment. If the biting animal is a pet, its vaccination status should be confirmed as soon as possible.

Hyperimmune (antibody rich) serum is flushed into the wound in hope of inactivating the virus before it may penetrate to the nerves. The patient receives an injection daily for fourteen days of rabies vaccine. In this way, when the virus comes out in secretions, a strong immune response is waiting to put down the infection.

ANYONE PURSUING A CAREER WITH ANIMALS SHOULD CONSIDER VACCINATION AGAINST RABIES.

QUARANTINES WHEN TRAVELING TO ISLANDS

Great Britain, Hawaii, and several other island areas have successfully eradicated rabies from their territory. These places are *EXTREMELY* cautious about allowing potential carriers of rabies in. Because of the long incubation period of rabies, a very long quarantine is needed; however, this must be balanced by the expense associated with quarantine and an owner's reluctance to be separated from his or her pet. In Hawaii, the quarantine period is 120 days in a facility on Oahu; however, recently an alternative procedure has been delineated by the local Hawaiian government. For listings of what each state requires for entry, the USDA has prepared a web site with the most recent regulations at: <http://www.aphis.usda.gov:80/vs/sregs>. For travel to another country it is best to check with that country's consulate.

FELINE VACCINATION FOR RABIES

Many cat owners are under the impression that indoor cats need not be vaccinated against rabies. It is important to recognize 1) that there is reasonable potential for wildlife exposure within the household (bats or invading raccoons, etc.) and 2) that there is the legal liability should an unvaccinated animal bite a person. The American Association of Feline Practitioners considers rabies vaccination to be necessary for *ALL CATS* and this is our advice as well. Further, local legal requirements in many areas may require rabies vaccination for all cats. Rabies vaccine for cats should be given in the right rear leg as low on the leg as possible.



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