

Rabies

Rabies is probably one of the best known and deadliest zoonotic diseases in the world. It has been around for thousands of years and strikes fear in people everywhere.

MORBIDITY: +

MORTALITY: ++++

Etiology: Rabies is caused by an infection with an enveloped RNA rabies virus in the genus *Lyssavirus*, family *Rhabdoviridae*.

Transmission

1. Saliva
2. The virus is not transmitted via blood, urine, or feces.
3. It is transmitted most often in saliva via a bite from an infected animal.
4. Most human exposures to rabies occur through domestic animals (dogs, cats, cattle, and horses) that, in turn, have been exposed to wild animals that are infected with the virus.

Clinical Signs in animals

Initial clinical signs in an animal infected with the rabies virus usually last 2–3 days. A behavioral change may occur in this initial stage in which the animal can become

1. Apprehensive.
2. Restless.
3. Shy.
4. A slight fever may also be found in this initial stage.

The furious form can last around 1–7 days and is more commonly found in the cat than the dog.

1. Restless.
2. Photophobic.
3. Easily excited.
4. Appear that they are barking or snapping at nonexistent objects.
5. Confined animals will often try to bite or attack.

The paralytic, or dumb, form of rabies lasts around 2–4 days, and the predominant clinical sign is progressive paralysis.

1. Increased salivation.
2. A dropped lower jaw.
3. Animals usually stop eating and drinking.
4. The urogenital tract is irritated or stimulated, resulting in frequent urination, erection in the male, and signs of increased sexual desire.
5. Respiratory failure is the final clinical sign prior to death.

Clinical Signs in Humans

1. The incubation period in humans is generally 1–3 months but can range from 2 days to several years.
2. Headache.
3. Fever.
4. Anxiety.
5. Pain and discomfort at the bite site.
6. Abnormal behavior.
7. Hypersensitivity to light.
8. Refuse to drink water (Hydrophobia).
9. Have excessive salivation.
10. Painful pharyngeal spasms when attempting to swallow liquids.
11. Death occurs usually due to convulsions or respiratory paralysis.

Diagnosis

Identification of the rabies virus is done by direct Immunofluorescence assay (IFA) of brain tissue postmortem.

Treatment

Once clinical signs of rabies are evident, there is no treatment to stop the progression of the disease. Postexposure vaccinations in mammals (except humans) have not been proven effective (due to the lack of studies).

Prevention

- 1- Rabies vaccinations should be kept up-to-date for all dogs, cats.
- 2- Avoid direct contact with unfamiliar animals, including stray animals. Teach children never to approach or handle unfamiliar animals, wild or domestic, even if they appear friendly.
- 3- Pet owners should keep their pets under direct supervision so they do not come in contact with wild animals.
- 4- Do not handle, feed, or unintentionally attract wild animals with open garbage cans.
- 5- Prevent bats from entering in homes, schools, and other similar areas, where they might come in contact with people and pets.
- 6- When traveling abroad, avoid direct contact with animals.

California (Lacrosse) Encephalitis

Etiology: RNA virus, genus *Bunyavirus*, family Bunyaviridae

Clinical signs: Human:

The disease occurs primarily in children and under 15 years of age.

1. Meningitis to severe encephalitis.
2. Fever.
3. Headache.
4. Nausea.
5. Vomiting.
6. A stiff neck.
7. Lethargy.
8. Convulsions are observed.

Animal: No known clinical disease in animals.

Diagnosis : Serologic tests hemagglutination inhibition, serum neutralization and complement fixation test are used.

Transmission: Mosquito borne. Squirrels are reservoirs of the virus.

Control and prevention

1. Avoid mosquito bites by use of protective clothing and chemical repellents, especially in wooded areas.
2. Screen dwellings and use mosquito netting around beds.
3. Spray campsites with insecticides.

Colorado Tick Fever (CTF)

Etiology: RNA virus, genus *Orbivirus*, family Reoviridae

Clinical signs:

Human:

- 1- Sudden onset of fever, chills, headache, retro-ocular pain, and myalgia.
- 2- Typically, characterized by a few days of illness followed by a few days of remission, then recurrence of illness, which may worsen over several cycles.
- 3- Young children may occasionally develop hemorrhages, encephalitis, or myocarditis, but the disease is generally milder in adults.

Animal: No clinical signs occur in animals.

Diagnosis :

Clinical diagnosis can be confirmed by isolation of the virus from the patient's blood. Serologic diagnosis is also possible with the neutralization, indirect immunofluorescence, and complement fixation tests

Transmission: To humans by the bite of adult *Dermacentor* species ticks.

Control and prevention

- 1- Prevent tick bites by avoiding tick-infested areas whenever possible.
- 2- When entering tick-infested areas, protective clothing should be worn and chemical repellents used.
- 3- Any attached ticks should be carefully removed to avoid crushing and to avoid leaving mouth parts in the wound.

Newcastle Disease (ND)

Etiology: RNA virus, genus *Paramyxovirus*, family Paramyxoviridae

Clinical signs:

Human:

The incubation period is usually one to two days, but may be as long as four days.

1. Conjunctivitis with congestion.
2. Pain, swelling of subconjunctival tissues.
3. Lacrimation.
4. Slightly elevated temperature.
5. Chills.
6. Pharyngitis.

Animal:

Among numerous bird species affected, chickens and turkeys are especially susceptible. Most common signs are respiratory, nervous, or both. Severity of outbreaks vary with the NDV strain; lentogenic strains are the least virulent, velogenic are the most, and mesogenic strains are intermediate.

1. If the respiratory tract is affected, birds gasp and cough.
2. Neurologic signs include drooping wings, torticollis, circling, depression, anorexia, and paralysis. In laying flocks, egg production may cease.
3. Viscerotropic syndrome is a more serious form, caused by some velogenic strains, characterized by sudden onset of watery, greenish diarrhea, tracheal discharge, and edema of the face and wattles; petechial hemorrhages occur in the mucosa of the proventriculus, and the intestinal mucosa becomes necrotic.
4. Death often occurs in 1-3 days.

Diagnosis: virus isolation early in an outbreak. Serologic tests include hemagglutination inhibition, serum neutralization, and ELISA.

Transmission

- Direct contact with feces, respiratory secretions
- Indirect contact (Feed, water, Equipment, Human clothing)
- Lab workers and vaccination crews most at risk
- Humans become infected when NDV contacts the eyes, as from aerosolized vaccines.

Control and prevention

Avian ND can be controlled by

- 1- Maintaining good hygiene on poultry farms.
- 2- Separating poultry houses.
- 3- Vaccination.
- 4- Human ND can be prevented by the use of goggles and masks when vaccinating poultry.
- 5- Infection birds of any species should be quarantined, and imports from countries where ND occurs should be prohibited.