



# Rabies: Unraveling the Enigma of a Deadly Viral Menace

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## DESCRIPTION

Rabies, a viral disease with a notorious reputation, has plagued humanity for centuries. Characterized by its deadly nature and historical associations with myths and fear, rabies remains a significant public health concern worldwide. This article delves into the intricate facets of rabies, exploring its etiology, transmission, clinical manifestations, preventive measures, and the ongoing efforts to control and eliminate this ancient viral menace. Rabies is caused by the rabies virus, a member of the *Lyssavirus* genus, a part of the *Rhabdoviridae* family. The virus is bullet-shaped, with a single-stranded RNA genome, and is highly neurotropic, meaning it has a strong affinity for nerve cells. Understanding the virology of rabies is crucial for comprehending its pathogenesis and devising effective preventive and therapeutic strategies. Rabies primarily affects mammals and is usually transmitted through the bite of an infected animal. While domestic dogs are the most common reservoirs, other mammals like bats, raccoons, skunks, and foxes can also carry the virus. Understanding the reservoirs and transmission dynamics is essential for formulating targeted control measures. The rabies virus typically enters the host's body through the saliva of an infected animal. Once introduced, the virus binds to nicotinic acetylcholine receptors at the neuromuscular junctions, facilitating its entry into peripheral nerves. From there, it travels retrogradely along the neuronal axons to reach the Central Nervous System (CNS), leading to severe neurological manifestations. Rabies' distinctive neurotropism explains its predilection for the nervous system. The virus exploits retrograde axonal transport, allowing it to ascend peripheral nerves and invade the CNS. Once in the brain, the virus induces encephalitis, causing inflammation and neuronal dysfunction. The pathogenesis of rabies involves the alteration of neurotransmission, leading to the characteristic neurological symptoms. The clinical manifestations of rabies are

characterized by a progressive and invariably fatal course. The disease typically presents in two forms: Furious (encephalitic) and paralytic (dumb) rabies. The clinical progression highlights the devastating impact of the virus on the central nervous system. The initial phase of rabies is often nonspecific, resembling flu-like symptoms. Fever, malaise, headache, and discomfort at the site of the bite mark the prodromal phase. This phase, which lasts for a few days to a week, precedes the onset of more severe neurological symptoms. The furious form of rabies is characterized by hyperactivity, hallucinations, hydrophobia (fear of water), and erratic behaviour. Patients may experience painful spasms of the swallowing muscles, leading to a fear of drinking or swallowing. As the disease progresses, patients become agitated, exhibit photophobia, and may succumb to seizures and paralysis. The paralytic form, less common than the furious form, is marked by muscle weakness, loss of coordination, and paralysis. Patients with paralytic rabies may not exhibit the characteristic hydrophobia, making the clinical diagnosis challenging. Respiratory failure is a common cause of death in the paralytic form. Once clinical symptoms manifest, rabies is nearly always fatal. The progression from initial symptoms to severe neurological manifestations is rapid, with death occurring typically within a few days to weeks after the onset of symptoms. The mortality rate is close to 100%, underscoring the urgency of early intervention and preventive measures. Various laboratory techniques are employed to confirm rabies infection, including direct and indirect methods.

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## CONFLICT OF INTEREST

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