

# An Outline on the Necessity of Rapid Rabies Diagnosis

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## DESCRIPTION

Rabies is an acute, progressive, and deadly encephalomyelitis that is transmitted most usually by the bite of a rabid animal. It is responsible for an estimated 61,000 human deaths globally. Due to a lack of sensitive laboratory diagnostic procedures, the true disease burden and public health impact of rabies are still underestimated. Rapid rabies diagnosis can aid in the implementation of early infection control and public health measures, as well as the avoidance of unneeded treatment/medical testing and the timely delivery of pre or post-exposure prophylactic vaccination to family members and medical personnel. Human rabies antemortem diagnosis encourages clinicians to try new therapy approaches in some patients, especially after a few cases of human rabies have been documented to survive. Traditional antemortem and postmortem rabies diagnosis methods have significant flaws.

Recent technological advancements have resulted in the improvement or development of various diagnostic assays, including methods for detecting rabies viral antigen and antibody, as well as assays for detecting viral nucleic acid and identifying specific biomarkers.

In humans, two types of rabies are recognized: Furious and paralytic. The conventional furious (encephalitic) form of rabies, which accounts for around 80% of human rabies cases, is diagnosed based on its characteristic clinical signs and symptoms and provides few diagnostic challenges. However, in some cases where clinical symptoms such as aerophobia or hydrophobia are missing, laboratory assistance may be required. The paralytic or atypical forms of rabies, which account for around 20% of human rabies cases, provide a diagnostic challenge in clinical practice. These instances are often clinically indistinguishable from Guillain-Barre syndrome (GBS), and they must be distinguished from neuroparalytic consequences caused by the Semple-type antirabies vaccine, which is still used in Mongolia, Myanmar, and Pakistan. Absence of a history of animal bite, mental or other abnormal clinical signs, lack of a reliable diagnostic test for GBS, and restricted availability of assays for antemortem identification of human rabies exacerbate the dilemma. Rapid rabies diagnosis is critical for implementing effective infection control and public health measures. Early detection can help avoid unnecessary treatment and medical tests, as well as prognostication, barrier nursing, timely administration of pre-or post-exposure prophylactic vaccination

to the patient's family members and the treating medical and nursing staff, and case closure and grief counselling with family members. Negative rabies testing can suggest the existence of another infectious agent or a noninfectious aetiology, which can help with medical treatment. When a history of exposure to an animal is unavailable, laboratory diagnosis of rabies can also aid in specific characterization of the causative agent and propose the likely source of infection, as well as identification of other individuals who may have been exposed to the same source of infection.

Rapid and accurate diagnosis made it easy to control an infectious viral disease like rabies. Successful rabies prophylaxis is based on both active vaccine immunization and passive injection of rabies virus neutralizing antibodies, which jointly remove the virus before extensive infection of the central nervous system develops. There are certain studies which attempted to create Monoclonal Antibodies (MAbs) that could detect rabies viral antibodies and antigens. The positive clones were chosen based on their different reactivity in the cell Enzyme linked immunosorbent assay and fluorescence in the Indirect Fluorescent antibody test. The reactive clones were titrated further and used for viral titration and neutralization. The neutralizing activity was assessed using the Fluorescence Activated Cell Sorter (FACS). MAbs that are selective for detecting rabies antibodies have also been found to be acceptable for competitive ELISA for measuring antibody levels in vaccinated patients. Reports of rabies acquired through organ transplantation underscore the importance of rabies screening in organ donors, particularly in those with acute progressive encephalitis of unknown cause and other rabies risk factors.

## CONCLUSION

Despite the fact that rabies is virtually always lethal in humans. The possibility of treatment adds to the incentive to make a diagnosis as soon as feasible and antemortem laboratory diagnosis has become more important in recent years. The current WHO expert consultation encourages research into management methods, immunomodulation procedures, and novel pharmaceuticals, including antiviral agents. Rabies is still one of the world's most neglected zoonotic illnesses. The lack of reliable and extensive surveillance data to indicate the disease burden, frequent rabies misdiagnosis, and a lack of intersectoral cooperation are all factors contributing to the low level of commitment to rabies control.

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