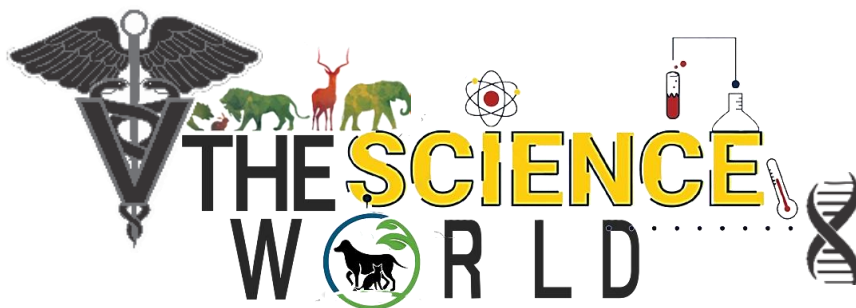




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Rabies: A Deadly Disease That Can Be Prevented

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Abstract

Rabies is one of the deadliest viral diseases affecting mammals, including humans. It is mainly transmitted through the bite or scratch of an infected animal, with dogs responsible for the vast majority of human cases. Once clinical signs appear, rabies is almost invariably fatal. However, timely post-exposure treatment can prevent the disease.

Keywords: Rabies, rabies virus, zoonosis, dog bite, vaccination, India

What Is Rabies?

Rabies is a **viral disease that attacks the nervous system**. It is caused by rabies virus, a member of the genus *Lyssavirus*. The virus affects mammals, including dogs, livestock, wildlife and humans. [2,3] Rabies is particularly dangerous because the virus eventually reaches the brain and spinal cord, causing severe neurological disease. Once clinical symptoms develop, the disease is almost always fatal. [1,2]

How Does Rabies Spread?

Rabies is mainly transmitted through the saliva of an infected animal, usually following a bite. The virus can also enter through scratches or contact of infected saliva with broken skin or mucous membranes. [1,2] Dogs are the most important source of human rabies infection and are responsible for up to 99% of human cases globally. [1] This is why controlling rabies in dogs is one of the most important steps towards protecting people.

What Happens After a Bite?

A rabies-infected animal may not always appear obviously sick at the time of exposure. After entering the body, the virus can eventually reach peripheral nerves and travel towards the central nervous system. The incubation period can vary considerably. During this period, the



person may show no obvious signs of disease. Once the virus reaches the brain, neurological symptoms begin to appear. Rabies may cause behavioural changes, agitation, excessive salivation, difficulty swallowing, paralysis and eventually coma and death. The disease can occur in furious and paralytic forms. [2,3]

Why Is Rabies So Dangerous?

The most frightening feature of rabies is that there is no reliably effective treatment once clinical disease develops. [1,3] But rabies has one major difference from many other fatal infections: death can usually be prevented if treatment begins before symptoms appear. After a suspected exposure, the wound should be washed thoroughly with soap and water as soon as possible. Medical attention should then be sought immediately. Depending on the type of exposure, post-exposure prophylaxis (PEP) includes rabies vaccine and, when indicated, rabies immunoglobulin [1].

Can Rabies Be Prevented?

Yes. Prevention works at two levels. At the animal level, vaccination of dogs is the most important strategy for breaking transmission at its source. Sustained vaccination coverage of dog populations can dramatically reduce the risk of [2] human rabies. At the human level, rapid wound washing and timely PEP following an exposure can prevent the virus from reaching the nervous system. Public awareness is therefore [1] just as important as vaccination. A person should never wait for symptoms after a potentially risky animal bite.

How Is Rabies Diagnosed?

Rabies cannot always be confirmed simply from clinical signs. Laboratory diagnosis is therefore important.

Several diagnostic methods are available, including fluorescent antibody-based tests, molecular methods and tests used to measure rabies-neutralising antibodies. The **rapid fluorescent focus inhibition test (RFFIT)** is commonly [3] used for assessing neutralising antibody levels. The rabies virus **nucleocapsid protein** is also an important diagnostic target because it is produced abundantly during infection. Research has explored its use in developing diagnostic assays for rabies.

Rabies in India

Rabies remains an important public-health problem in India. A recent nationwide study conducted during 2022–2023 provided [4] updated estimates of animal bites and human rabies deaths, highlighting the continuing burden of the disease in the country. India has also adopted a national goal of eliminating dog-mediated human rabies by 2030. Achieving this [5] goal



requires sustained dog vaccination, better surveillance, public awareness and rapid access to PEP.

Conclusion

Rabies is a deadly disease, but it is also one of the most preventable fatal infections. The message is simple: never ignore a potentially risky animal bite or scratch. Immediate wound washing, prompt medical assessment and appropriate post-exposure treatment can save a life. At the same time, vaccinating dogs remains the most effective way to stop rabies at its source.

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