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Rabies Day Special: Bridging the Gap between Science and Safety

Popular Article

Rabies- A Zoonotic Disease

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Introduction:

Rabies is a viral disease that affects the central nervous system and is preventable by vaccination. Dogs are the source of the virus in up to 99% of instances of human rabies. Youngsters between the ages of five and fourteen are commonly the victims. Mammals, including dogs, cats, cattle, and animals, are susceptible to rabies.

Rabies is mostly transmitted to humans and animals by salivary gland bites, scratches, or direct contact with mucosa, such as the eyes, mouth, or open wounds. After the onset of symptoms, rabies is almost always lethal. An estimated US\$ 8.6 billion is spent annually on rabies worldwide, which includes lost lives and livelihoods, medical expenses and related expenditures, and unquantifiable psychological damage.

The average projected cost of rabies post-exposure prophylaxis (PEP) in 2018 was US\$ 108, including travel expenses and lost wages. For individuals making US\$ 1-2 per person, per day, this might be a financial hardship. Every year, more than 29 million people receive the human rabies vaccine worldwide.

Rabies:

Rabies is a neglected tropical disease (NTD) that primarily affects communities on the margins. While there are effective human rabies vaccines and immunoglobulins available, individuals in need of them sometimes cannot afford or obtain them.

Lyssaviruses:

They are the cause of rabies, an acute, progressive encephalomyelitis. Mammals worldwide are susceptible to this zoonosis, with dogs, bats, and wild predators serving as the main reservoirs. Acute behavioural abnormalities and gradual paralysis are typical clinical symptoms. The rabies virus, which causes zoonotic disease, typically infects people through animal bites.

Epidemiology:

Around 60,000 people die from rabies annually worldwide. More prevalent in less wealthy countries where canines are endemic for rabies.

Signs and Symptoms:

Rabies usually takes two to three months to incubate, although it can take as little as one week or up to a year, depending on the location and viral load of the virus. Common indicators of rabies include fever, discomfort, and strange or inexplicable tingling, prickling, or burning sensations at the location of the wound. The virus causes gradual and lethal inflammation of the brain and spinal cord as it spreads throughout the central nervous system. People with clinical rabies can sometimes be treated, but it is seldom cured and not always without significant brain damage.

Two types of Rabies Exist:

Furious Rabies: Hyperactivity, irritable behaviour, *hallucinations*, poor coordination, *hydrophobia* (a dread of water), and aerophobia (a fear of drafts or of fresh air) are all symptoms of furious rabies. After a few days, cardio-respiratory arrest kills the patient.

Paralytic Rabies: About 20% of all cases of rabies in humans are paralytic episodes. Compared to the furious version, this form of rabies usually has a less dramatic and longer course. Muscles at the site of the wound eventually lose their ability to move. Gradually, a coma sets in, leading to final demise. The underreporting of rabies is partly due to the misdiagnosis of the paralytic form of the disease.



Figure: Ropy salivation of Rabid Dogs



Figure: Aggressiveness in Rabid Dog

Diagnosis:

Without a reliable history of interaction with a rabid animal or distinct signs of hydrophobia or aerophobia, it is challenging to make a clinical diagnosis of rabies. Determining how to administer PEP requires accurate risk assessment. It is advised to provide complete and compassionate palliative care if symptoms appear and death is imminent. Negri bodies in the neurons of affected animals are characteristic of rabies -

- Direct fluorescent antibody test (FAT)
- Virus can be cultured neuroblastoma cells
- RT-PCR used to detect viral RNA in brain sample.

Prevention & Control:

Vaccinating Dogs- The most economical method of preventing rabies in humans is to vaccinate dogs—including puppies—through mass dog vaccination campaigns, as this effectively halts the disease's spread. Rabies cannot be effectively controlled by eliminating free roaming dogs.

Awareness- Essential add-ons to rabies vaccination programs include educating the public, both adults and children, on ethical pet ownership, how to handle potentially dangerous animals, and how to behave around dogs.

Control of Rabies – Mission Rabies:

Goa hosted the inauguration of *Mission Rabies* in 2013 after it was determined that the state would be the best place to establish the benchmark for rabies eradication throughout India.

Mission Rabies- is an international NGO working to develop effective methods for rabies control where it is needed most. The charity has been responsible for implementing mass dog vaccination, community education and rabies surveillance activities in Goa under the leadership of the Government of Goa since 2013.

Our initiative has expanded steadily since our first campaign in India, where in just 4 weeks, over 60,000 canines received vaccinations in 14 cities. It began as a local government-led project and has grown to include complete immunization, education, and surveillance components, eventually becoming a state-wide public health campaign.

Mission rabies teams have kept up their relentless effort throughout the pandemic, coming up with innovative strategies to make sure that vulnerable areas are kept free from rabies. While schools were closed, we came up with other strategies to raise public awareness and educate the public, such as posting instructional messages online and providing critical staff with COVID-safe training. In 2021, our teams successfully immunized over 75,000 canines throughout the state and equipped over 200,000 youngsters with life-saving knowledge to safeguard themselves against the devastating threat of rabies, even in the face of ongoing hurdles faced by the worldwide pandemic.

The first state in India to receive the official designation of "**Rabies Controlled Area**," meaning that formal controls over the illness were enforced by the Indian government.