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Popular Article

Kyasanur Forest disease (KFD) in India

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Incidence in India

Kyasanur Forest Disease (KFD) was initially identified in 1957 in Shimoga district, Karnataka, a remote and densely forested region in the Western Ghats of India. From this epicenter, the disease gradually spread to adjacent districts within Karnataka, including Chikkamagalore, Uttara Kannada, Dakshina Kannada, Udupi, Chamarajanagar, and Belagavi. This expansion occurred over several decades, with Chamarajanagar reporting cases in 2012 and Belagavi in 2016. Furthermore, in 2013, the KFD virus was detected in autopsy samples of deceased monkeys in Nilgiris district, Tamil Nadu, marking the disease's inter-state transmission.

Subsequently, neighboring states bordering Karnataka reported monkey deaths and human cases, including Kerala's Wayanad (2013) and Malappuram (2014), Goa's North Goa (2015), and Maharashtra's Sindhudurg (2016). Most recently, Wayanad district in Kerala has experienced a resurgence of KFD. The spread of KFD across state borders underscores the need for enhanced surveillance, coordinated inter-state efforts, and proactive measures to mitigate the disease's impact on local populations. Effective collaboration among health authorities, forest departments, and local communities is crucial in containing this zoonotic disease

Mode of transmission

Kyasanur Forest Disease Virus (KFDV) is primarily transmitted through the bites of infected ticks, particularly during their nymphal stage. Wild monkeys, specifically *Semnopithecus entellus* and *Macaca radiata*, contract the disease through these tick bites, leading to severe febrile illness. When infected monkeys succumb to the disease, the ticks detach and create "hot spots" of infectious ticks, further propagating the disease. Humans can become infected through two primary routes: bites from infected ticks or contact with infected animals, such as sick or recently deceased monkeys. Importantly, epidemiological data indicates no human-to-human transmission, although laboratory accidents have resulted in human cases in the past.

The KFD epidemic follows a distinct seasonal pattern, typically commencing in October or November, peaking between January and April, and subsiding by May and June. This temporal correlation is closely tied to the heightened activity of nymphal ticks during the November-to-May period, underscoring the critical role of tick ecology in disease transmission. Understanding the transmission dynamics and seasonal patterns of KFD is essential

for developing effective prevention and control strategies, particularly in regions with high monkey and tick populations. Targeted measures, such as tick control and public education, can mitigate the risk of disease transmission and protect vulnerable communities.

Symptoms

Incubation period for KFD is of 3-8 days. The disease then manifests suddenly, characterized by high-grade fever (up to 104°F/40°C) accompanied by chills, intense frontal headache, severe myalgia, body aches, muscle tenderness, photophobia, nausea, vomiting, and diarrhea. Respiratory symptoms, such as persistent cough, may also occur. This febrile phase lasts 5-12 days, often followed by intense prostration.

In some cases, hemorrhagic symptoms may appear early, including nasal bleeding, gum bleeding, and intestinal bleeding. Additionally, some patients experience persistent cough with blood-tinged sputum and occasional substantial hemoptysis, which typically resolve soon. Severe cases are marked by neurological symptoms, including neck stiffness, mental disturbances, coarse tremors, giddiness, and abnormal reflexes. A second phase of the illness emerges around day 8, characterized by headache and severe prostration, potentially progressing to central nervous system involvement, such as meningo-encephalitis, in rare instances.

KFD's case fatality rate ranges from 2-10%, with higher mortality rates observed among the elderly and individuals with underlying conditions, such as liver disease (particularly alcoholic liver disease). Prompt medical attention and supportive care are crucial in managing the disease and reducing the risk of complications. Overall, KFD's clinical presentation is diverse, ranging from mild to severe, and can involve multiple organ systems. Early recognition and appropriate management are essential to mitigate the disease's impact and prevent long-term consequences.

Treatment

There is no definitive treatment for Kyasanur Forest Disease (KFD). However, prompt and effective symptomatic management can significantly improve patient outcomes. This supportive therapy involves maintaining hydration levels, ensuring hemodynamic stability, and addressing neurological symptoms. By providing timely and comprehensive care, healthcare providers can substantially reduce the disease's morbidity and mortality rates, ultimately improving the chances of recovery and minimizing the risk of long-term complications. Effective supportive therapy plays a crucial role in managing KFD, and its prompt administration is essential in mitigating the disease's severity.

Prevention and control

Surveillance

KFD surveillance employs a multi-faceted approach, integrating three key components. Human surveillance focuses on early detection, prompt laboratory diagnosis, and proper patient management through ongoing monitoring under the Integrated Disease Surveillance Programme (IDSP) and targeted surveillance for unusual suspected cases. Meanwhile, monkey surveillance, conducted in collaboration with Forest and Veterinary Departments, tracks monkey deaths in endemic and non-endemic areas to anticipate human cases. Additionally, tick surveillance involves regular monitoring to identify hotspots, track tick positivity rates, and conduct periodic tick incrimination studies. This comprehensive strategy enables early detection, prompt response, and effective disease control measures, ultimately containing KFD transmission.

Personel Protection

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When venturing into forest areas, using tick repellents like Dimethylphthalate (DMP), NN-Diethyl-m-Tolumaide (DEET), or Mylol on exposed skin provides temporary protection. For longer stays, reapplication is crucial. To maximize safety, individuals should also wear protective clothing, covering their neck, chest, back, and legs, in addition to applying repellents. This dual approach effectively minimizes the risk of tick bites and associated diseases

Vaccination

Although comprehensive details on KFD vaccines for human use are limited in India, the Karnataka State Government has taken a proactive stance by introducing a vaccination policy in areas prone to KFD outbreaks. This strategic initiative focuses on safeguarding communities in endemic regions, mitigating the risk of disease transmission.

Tick control

Tick control involves source reduction through targeted insecticide spraying within 50 meters of reported monkey deaths and along frequently used forest tracks. Vector control can be achieved through dusting or spraying with pyrethroids, while repellents can be applied to exposed skin and clothing when venturing into forests. Additionally, treating cattle with insecticides prevents ticks from being transported from forests to human dwellings. Physical control methods include controlled burning of dry leaves and bushes along forest boundaries and around human habitats.

Important points to remember

To prevent the spread of KFD, it's crucial to take specific precautions. When visiting or working in forests, report monkey deaths to authorities, wear full protective clothing, apply tick repellents, and wash clothes and body with hot water and soap afterward. Educate villagers to avoid infected areas and seek immediate medical attention for suspicious cases. Controlling ectoparasites on cattle and domestic animals also helps reduce tick populations. Additionally, refrain from bringing leaves from infected areas for cattle bedding, avoid visiting areas with recent monkey deaths or past KFD cases, and never handle infected monkey carcasses without personal protective equipment. By following these guidelines, you can significantly minimize the risk of KFD transmission and protect yourself and your community.

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