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Editorial

The Challenge of Encephalitis in Bangladesh

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Encephalitis, the inflammation of the brain, has emerged as a pressing public health concern in Bangladesh. This silent epidemic, often overshadowed by other health challenges, demands urgent attention due to its significant morbidity and mortality. The country faces two major types of encephalitis: Nipah virus (NiV) encephalitis and Japanese encephalitis (JE). Each presents unique challenges, but together they paint a grim picture of the country's vulnerability to this debilitating condition. In addition, there are other sporadic cases of encephalitis occurs here with the outbreak of some of the seasonal viruses like dengue and chikungunya viruses. We also encounter some of the cases of herpes simplex viral encephalitis sporadically. The diagnosis of encephalitis is very challenging in Bangladesh because of scarcity of diagnostic tools and we have to depend on the clinical case definition encephalitis only in some situations.

The Burden of Encephalitis in Bangladesh

Nipah virus encephalitis, first identified in Bangladesh in 2001, is a zoonotic disease transmitted from animals to humans. Fruit bats, the natural reservoirs of the virus, are often implicated in its spread. The consumption of raw date palm sap, contaminated with bat excretions, has been a common source of outbreaks. Human-to-human transmission further exacerbates the problem, particularly among caregivers and healthcare workers. The mortality rate of NiV in Bangladesh is alarmingly high, ranging from 33% to 92%, making it one of the deadliest infectious diseases in the region[1].

Nipah virus is highly pathogenic enveloped RNA virus from paramyxovirus family. Transmission occurs from exposure to contaminated secretions or tissues of infected bats or pigs. Human-to-human transmission of Nipah virus occurs via close contact or exposure to NiV infected body fluid (e.g., blood, urine, nasal secretions). The Primary modes of transmission in Bangladesh have been found to be date palm sap consumption and person-to-person transmission[2]. The incubation period is from 4 to 14 days but an incubation period as long as 45 days has been reported. NiV primarily causes acute encephalitis and respiratory illness and is highly fatal. A small percentage of infected people are asymptomatic. Prodromal signs and symptoms are fever headache and myalgia. Features of encephalitis develop within a week, with the most common symptoms being altered mental status, areflexia, hypotonia, segmental myoclonus, gaze palsy and limb weakness[3].

Japanese encephalitis, on the other hand, is a mosquito-borne disease that predominantly affects children in rural and peri-urban areas. While the incidence of JE in Bangladesh is relatively lower than in some neighboring countries, it remains a significant cause of viral encephalitis, especially during the monsoon season. The disease's impact extends beyond mortality, as survivors often suffer from long-term neurological and psychological sequelae.

A study on transmission dynamics of JEV in north-western Bangladesh, observed that among 11,364 pigs in a backyard 30% had evidence of previous JE virus infection [4]. JE incidence may be substantially reduced through reasonable pig vaccination coverage. Future studies are recommended to understand the contribution of pig infections to JE risk in humans in Bangladesh and the potential impact of pig vaccination on human disease.

In Bangladesh, the epidemiology and etiology of encephalitis remain largely unknown, JE outbreak was first reported in 1977 in a rural area in Mymensingh district with 22 cases

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and seven deaths. Cases were confirmed as JE infection by serological testing. Most of the patients were under 15 years of age. Outbreak was thought to be due to local introduction of the virus from an endemic area. However, after two years, serological surveillance revealed a low rate of JE positive antibody. No new cases were documented in that area for two years following the outbreak [5].

World Health Organization has recommended large scale immunization programs in all areas where JE is a public health problem to control JE. But from surveys it became clear that only few economically strong Asian countries have reduced the JE load. The main reason is lack of knowledge on environment, disease burden, piling of human and livestock wastes, poor agriculture and farm yard management, low vector control and poor clinical care of patients and vaccine programs.[6]

Other Causes of viral encephalitis in Bangladesh, we used to face some other cases of encephalitis during the outbreaks of some of the seasonal viruses like dengue and chikungunya viruses. Diagnosis is usually done when there are strong clinical features of deterioration of consciousness level with convulsion. CSF study is the key with appropriate antiviral antibodies and PCR. In 2 large series of dengue and CHIKV infection in Dhaka during 2019 1nd 2017 respectively found few cases of encephalitis with 2 deaths in dengue. [7,8]

Common conventional viruses that may cause acute encephalitis are Poliomyelitis, PML, Herpes simplex, Varicellazoster, Rubella, Measles, Cytomegalovirus, Rabies, HIV, Coxsackie A & B, HTLV, Arbo-Virus. These viral infections can be presented as isolated acute viral encephalitis.

Challenges in Addressing Encephalitis

The fight against encephalitis in Bangladesh is fraught with challenges. Limited disease surveillance and diagnostic facilities hinder timely detection and response. Public awareness about preventive measures, such as avoiding raw date palm sap or controlling mosquito breeding sites, remains inadequate. The healthcare system, particularly in rural areas, lacks the resources and trained personnel to manage severe cases effectively. Additionally, the absence of a robust vaccination program for JE leaves many vulnerable populations unprotected.

Current Efforts and the Way Forward

Efforts to combat encephalitis in Bangladesh have seen some progress. Public health campaigns aim to educate communities about the risks associated with raw date palm sap and the importance of personal protective measures against mosquito bites. However, these efforts need to be scaled up and complemented by targeted interventions.

Vaccination is a cornerstone of JE prevention. Introducing and expanding JE vaccination programs in endemic regions could significantly reduce the disease burden. For NiV, research into potential vaccines and therapeutics should be prioritized. Enhancing disease surveillance and diagnostic capabilities is equally critical to identify outbreaks early and implement control measures promptly.

Healthcare infrastructure must be strengthened to provide adequate care for encephalitis patients. Training healthcare workers to recognize and manage encephalitis cases, coupled with investments in intensive care facilities, is essential. Collaboration with international organizations can provide technical and financial support to address these challenges effectively.

A Call for Action

Encephalitis in Bangladesh is not just a medical issue; it is a societal challenge that affects the country's most vulnerable populations. Addressing this silent epidemic requires a multi-faceted approach involving policymakers, healthcare professionals, researchers, and communities. With targeted interventions and sustained commitment, Bangladesh can mitigate the impact of encephalitis and protect future generations from its devastating effects.

The time to act is now. By prioritizing encephalitis as a public health concern, Bangladesh has the opportunity to turn the tide against this silent epidemic and ensure a healthier future for its people.

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