THE SCIENCE WORLD
A Monthly e Magazine
ISSN:2583-2212
Popular Article
October 2024 Vol.4(10), 3842−3844

Chandipura Virus: A Lurking Danger in childrens' of Rural India

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https://doi.org/10.5281/zenodo.13942167

Abstract

Chandipura (CHPV) is hidden danger in the Children's of rural India, Since the virus is responsible for causing Acute Encephalitis Syndrome (AES). It is a vector borne disease, first discovered in the Chandipura village in Maharastra, India. Since then, sporadic cases of AES were recorded from different parts of India. Previously, the cases of Chandipura encephalitis were recorded from Andhra Pradesh and Maharashtra. The present CHPV outbreak in Gujrat in 2024 is one of the most severe outbreaks occurred in the past 20 years, with the mortality rate of 33%. Unfortunately, there is no specific treatment or vaccine for CHPV, so management involves supportive care like hydration, seizure control, and intensive care for severe cases. Health authorities are focusing on vector control through insecticide spraying, environmental management, and public awareness campaigns to curb the spread. There is also an emphasis on educating healthcare workers and the public on recognizing symptoms early, especially in children, who are the most vulnerable to this virus.

Introduction:

Chandipura virus (CHPV) is emerging threat and develops the acute encephalitis in humans especially in the paediatrics population. CHPV is transmitted through the bite of vectors such as send flies, mosquitoes and ticks. The disease is endemic in India, with the sporadic outbreaks were recorded regularly, but the current outbreak is largest then the past outbreaks. In the recent outbreak from early June to mid-August 2024, The Ministry of Health & Family Welfare of the Government of India reported total of 245 cases of acute encephalitis (swelling in the membranes of brain) cases (AES) of which 64 cases confirmed as CHPV infection. The virus was discovered in the year 1966 by Bhatt and Rodrigueze, at Virus Research Center (VRC), Pune India. The CHPV virus was discovered accidently, while investigating the patient having fever at the Chandipura village, Maharastra, for Dengue and

Chickungunya virus aetiology and was thus named Chandipura Virus. The case fatality rate of the disease is high (56-75%) also there is no specific treatment or vaccine is available. Fatality rate can only be lowered by providing early care and supportive treatment to the patients.

Etiology:

The CHPV virus is single stranded, negative sense RNA virus it was named after the place of its discovery. The CHPV belongs to genus vesiculo virus under the family Rhabdoviridae. CHPV virus has a notable ability to mutate and increase its pathogenicity then other vesiculovirus.

Epidemiology:

The incidence of CHPV increased greatly because monsoon season creates favourable environment for the breeding of vectors as the virus is primarily transmitted through arthropods such as mosquitoes, ticks, and sandflies, other insects also act as vectors. Sandflies of the genera Phlebotomus and Sergentomyia have been proved as vectors of CHPV transmission.

Whom does it affect mainly?

The Chandipura virus primarily affects children under 15 years old, especially in rural areas. During the 2003 outbreak in Andhra Pradesh, the affected children's ages ranged from 9 months to 14 years. Most fatalities occurred within 48 hours of hospital admission. In the ongoing outbreak in Gujarat, all suspected deaths have involved children.

Symptoms:

The disease affects mostly children under 15 years and can present with a rapid onset of fever, following vomiting, diarroea, altered sensorium (change in mental status or consciousness) convulsion, coma. Neurological signs like inability to speak, loss of balance, vision change. Meningeal irritation like signs headaches, neck stiffness, photophobia and seizures. In children, it can lead to high mortality within 48 to 72 hours of symptoms onset, typically presenting with AES.

Treatment:

There is no specific treatment of the disease because no effective antiviral drug and vaccine is available yet. Early diagnosis and the treatment through the supportive therapy are key. Management of disease can be done by maintaining airways, breathing and circulation through oxygen therapy and ventilation as required. Proper balance of fluid and electrolyte balance, hyperpyrexia (Body temp. $>106^0$F), raised intracranial pressure and seizures and prevention of secondary bacterial infections are also detailed.

Prevention and Control: Vectors play key role in the transmission of CHPV. Therefore, the control of vector is an important prevention strategy.

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Published 16/10/2024

- **Vector population control:** Identify the breeding site of the flies and mosquitoes such as cracks, crevices, tree holes, dark rooms, stable and store room. Destroy the breeding site, spray insecticide and sanitize the breeding places.
- **Prevention of bites**: Always use full sleeves clothes when you go out, avoid dark colour clothes; it attracts mosquitoes, use repellents and nets.
- **Environment control:** Maintain proper hygiene, proper disposal of the waste and refuse, stopping open air defecation.

Conclusions:

CHPV is responsible for causing acute encephalitis in the children's of rural India. The disease is mainly transmitted through the bite of arthropods vectors mainly sand flies. CHPV is responsible for causing febrile illness and leads to some neurological disorder such as coma, convulsion and encephalitis. Due to unavailability of the vaccine and specific treatment, disease can only be treated by maintain the fluid electrolyte balance with symptomatic treatment of the patients. The disease can be controlled by controlling vector populations.

Source:

World Health Organization (WHO). Acute encephalitis syndrome due to Chandipura virus – India, 24 August, 2024.
(https://www.who.int/emergencies/disease-outbreak-news/item/2024-DON529)

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Published 16/10/2024