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CASE REPORT OF JAPANESE ENCEPHALITIS IN BATU PAHAT HOHOR: A PUBLIC HEALTH PERSPECTIVE

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Abstract

A 9-year-old girl from Batu Pahat, Johor, presented with acute encephalitis syndrome to the hospital on 31st October 2022. Subsequently, the diagnosis of JE was confirmed by a positive serum JE IgM and radiological findings suggestive of JE on MRI. The patient received treatment at Hospital Sultanah Aminah Johor Bahru (HSAJB) from 2nd November 2022 to 12th December 2022 and then finally discharged home in good health. This paper describes the case and public health interventions including case investigation, case detections, entomological investigation, control, and preventive measures.

Introduction

Japanese Encephalitis (JE) is a mosquito-borne viral infection primarily transmitted by Culex mosquitoes. Pigs and birds act as amplifying hosts for the virus [1]. Patients who were infected with JE virus (JEV) may have central nervous system disorders or features of acute encephalitis signs and symptoms. This case report presents a comprehensive approach to the detection and control in response to the reported case of JE in Batu Pahat.

Materials and Methods

- Case definitions of JE used in this study was based on the Third Edition Case Definition of Infectious Disease in Malaysia. Clinical case definition of JE is a febrile illness of variable severity associated with neurological symptoms ranging from headache to meningitis or encephalitis. Symptoms can include: headache, fever, meningeal signs, stupor, disorientation, coma, tremors, paresis (generalized), hypertonia, loss of coordination. A laboratory confirmed JE case is one with either JE virus-specific IgM in the CSF, or four-fold or greater rise in the JE virus-specific antibody in paired sera, or detection of the JE virus, antigen or genome in tissue, blood or other body fluid [2].
- Case was investigated by interviewing the patient's family members, reviewing the case hospital notes, and conducting field investigations.
- Active and passive case detections as well as environmental and entomological investigations were carried out, covering 2km radius area from the case house.
- Data was entered and analyzed using Microsoft Word and Excel.

Results

Case Description

The District Health Office (PKD) in Batu Pahat, Johor has received a report of a single case of JE from PKD Johor Bahru on 29th November 2022 involving a previously healthy primary school student from who lives in Parit Sulong, Batu Pahat. She presented with first episode of seizure on 31st October 2022 which later progressed to status epilepticus that required intensive care in Peadiatric Intensive Care Unit (PICU) HSAJB. Within 2 weeks prior symptoms, she attended school as usual and no history of travelling to endemic area of JE. She received treatment at HSAJB and was discharged well after hospitalized for a month.

Field investigation

A field investigation was carried out from 29th November 2022. It was revealed that the case was a student at Sekolah Kebangsaan Parit Sulong in the morning from 0730H to 1300H and attended Sekolah Rendah Agama Parit Sulong in the afternoon from 1530H to 1830H. She resides in a suburban area at Jalan Tiong, Parit Sulong. The surrounding environment of the case's house is near oil palm plantations and shrubs. Malays are the majority residents in the area. There was no evidence of livestock farms such as pigs, horses, cattle or goats in 2km radius of the patient's residence. However, there were stagnant water body and ground water found in the area that can become potential breeding spots for JE vectors. In addition, rumour surveillance found reports on the multiple sightings of wild boar near the case's residential area.

Case Detection

Active case detection (ACD) activities were carried out by PKD Vector Unit in collaboration with the Parit Sulong Health Clinic staff within 2km radius of the town. A total of 2246 people were screened to identify individuals exhibiting JE symptoms. Nevertheless, there was no clinical cases of JE identified during the ACD surveillance period. Passive case detection (PCD) gathered no other cases from nearby clinics and hospital.

Entomological Investigation

Multiple Culex species were identified within 2km radius from the case's residence. Larva survey was done using Dipping technique while adult mosquitoes were captured using Center of Disease Control (CDC) light traps and Human Landing Catch (HLC) technique, further confirming their presence. Entomological findings highlight the importance of control of JE vector to mitigate the risk of JE virus transmission.

Discussion

- A series of control and prevention activities including inspection and destruction of potential breeding sites, larviciding and ultra-low volume (ULV) spraying were performed aimed to reduce the vector population and minimize the risk of JE transmission. Moreover, health promotion and education activities were conducted to promote awareness among the local merchants, local populace and school administrators.
- Discussions with representatives from the Veterinary Department and Wildlife Department of Batu Pahat, was a success and samples from local wild boars were sent to detect JEV. Although none of the samples came back positive, it is still possible that local wild boars may serve as amplifying hosts for JE transmission in this case.
- Public health interventions of JE encompass multiple approaches. One of the successful interventions includes vaccination. JE vaccine has been integrated into the National Immunization Program in Malaysia since 2007. However, it is only compulsory for those living in endemic area of JE in Malaysia which is Sarawak [3].
- Effective vector control is crucial to cut off the transmission of JEV include the elimination of mosquito breeding grounds, application of larvicides and sprinkling of insecticides. Moreover, community education programs to raise awareness of the significance of practicing personal protection measures such as the use of insect repellants and bed netting should be empowered [4].
- Early detection of JE cases is essential for disease containment and prompt intervention. Cross-sector collaboration such as with Veterinary Department in enhancing surveillance of livestock populations may provide early warning signs of viral activity especially among pigs that serve as the most common amplifying hosts [5].

Conclusion

The case report highlights the importance of public health intervention which are active case detection, vector control measures, entomological investigations and collaboration with other agencies in managing JE. With the presence of vectors in the area, it is possible that JEV was coming from the wild boars or other amplifying host in that area. Hence, it is crucial to maintain the public health surveillance of JE cases and empower JE awareness to the communities.

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