



JAPANESE ENCEPHALITIS OUTBREAK INVESTIGATION IN RAJASTHAN

| | |
|-------------------------------|--|
| Dr Deepa Meena | State Epidemiologist (IDSP), Directorate of Medical and health services Rajasthan. |
| Jyoti Gupta* | State Entomologist, (IDSP), Directorate of Medical and health services Rajasthan. *Corresponding Author |
| Dr Ravi Prakash Mathur | Additional Director (RH), Directorate of Medical and health services Rajasthan. |
| Dr V K Mathur | Director(PH), Directorate of Medical and health services Rajasthan. |

KEYWORDS :

Japanese encephalitis (JE) virus is the leading cause of vaccine-preventable encephalitis in Asia and the western Pacific. For most travelers to Asia, the risk for JE is very low but varies based on destination, length of travel, season, and activities. A visit for JE case investigation was carried out by state IDSP team in november in Keshoraipatan & Arnetha village. During the visit complete history of patient was recorded. House to house and Entomological survey was carried out along with district team in affected area. There was abundance larvae of Culex mosquitoes found and were collected from drain adjoining with paddy field. Pig's population found just in front of the house and piggeries situated within 500mts from patient's house. Paddy fields with water frequenting birds (Egret) found within 2 km range of the patient's house. Seven blood samples were collected of suspected patients out of which two were found JE positive, two were borderline for JE and one was dengue positive. Recommendations were given to district team about fever surveillance and anti-larval activities on regular basis, dedicated staff(MPW,MI & IC) for anti larval activities, IEC, all the reporting units (health institutions)in endemic areas both in public and private sector should further notify all these suspected JE cases based on standard case definitions.

Japanese encephalitis virus is transmitted between animals by Culex mosquitoes, and occurs across eastern and southern Asia and the Pacific rim. High density of Culex mosquitoes, Presence of amplifying hosts such as pigs, water birds (herons, egret) etc, Paddy cultivation are risk factors for Japanese encephalitis

Case Report

Although JEV infection is very common in endemic areas (many countries in Asia), less than 1% of people affected develop clinical disease, and severe disease affects about 1 case per 250 JEV infections. Although rare, severe disease can be devastating; among the 30,000-50,000 global cases per year, approximately 20-30% of patients die and 30-50% of survivors develop significant neurological sequelae. A positive case of Japanese encephalitis was reported from Bundi district, Rajasthan State IDSP team along with District team performed investigation. 30 year/female patient resident of Keshoraipatan, block - District -Bundi. Keshoraipatan is located 45kms from bundi city and 25 kms from kota. Patient suffered from high grade fever since 5.10.2017 and went to CHC Keshoraipatan patient was given symptomatic treatment by physician. Patient went to MBS Kota and was not relieved even after two days, patient went to new medical college hospital Kota, relatives took her to private hospital and patient was taken on ventilator was diagnosed with encephalitis symptoms and sample was sent to MBS Kota for JE investigation (which were further sent to NIV Pune and was found positive 9.11.17) patient was admitted from 9 to 12 October, and was referred to MBS kota again was taken on ventilator there also condition deteriorated and patient died on 16.10.17 at 9:30 pm.

Activities done in Affected area:- Following activities done in affected area

- Complete history of patient was recorded.
- Entomological survey was carried out in affected area. Larvae of Culex mosquitoes were collected from drain adjoining with paddy field.
- Larvae collected in the field reared in laboratory for emergence of

adult mosquitoes for identification of vector species.

- Anti larval and anti adult activities like Air space spray and outdoor fogging was done inside house.
- House to house survey was carried out along with district team.

Day wise ant larval activities done in area are as follows:-



| sno | House | MLO | Pyrethrum | Temiphos | Blood slide | Date |
|-----|-------|-----|-----------|----------|-------------|----------|
| 1 | 30 | 15 | 30 | 136 | 2 | 10.11.17 |
| 2 | 63 | 24 | 60 | 228 | 2 | 11.11.17 |
| 3 | 200 | 138 | 184 | 686 | 2 | 12.11.17 |
| 4 | 50 | 20 | 50 | 153 | 1 | 13.11.17 |

CHC Keshoraipatan

Patient first went for treatment at this CHC she took treatment for 3 days. it was inquired whether any patient with altered sensorium was reported to CHC or not and last two months OPD, IPD & fever cases were recorded no increase in cases was seen even there were zero cases in mid of the month this shows record for the fever cases was not properly maintained.

Arnetha village

- To verify media reports of many deaths due to dengue fever in the village a visit was carried out at Arnetha village. A death from suspect DHF was reported from the village in October month. Density of Aedes mosquito larva (Dengue, Chikunguniya vector) found in Arnetha village. Junk material such as tin, tyre, containers and water pots on roof were found in most of houses which serves as breeding sites for vector search for recent fever cases was done in the village.

Observations

Pig's population found just in front of the house and piggeries situated within 500 Meter from her house. (Fig-1) Water body found near by patient's house which was treated with MLO by survey team. (Fig-2) Paddy field within 2 KM range of the patient's house. Larval density of Culex mosquitoes found in the area. (Fig-3). Water frequenting birds (Egret) found in paddy field. (Fig-4). No travel history was found. Fogging was not done till date team reached the area, after team reached for investigation fogging started by the survey team during day time.

Results

Laboratory diagnosis :-

Seven blood samples were collected of suspected patients tested for

Dengue, Scrub typhus, chikungunya and JE out of which two were found JE positive, two were borderline for JE and one was dengue positive.



Fig 1:- Pigs in front of patient's house.



Fig 2:- Water body treated with MLO near patient's house



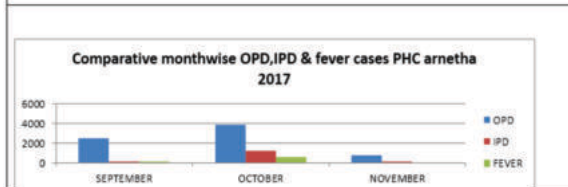
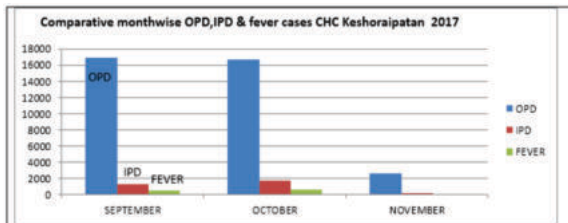
Fig 3:- Larvae of Culex mosquito found in drain adjoining with paddy field



Fig 4:- Egret bird in paddy field

| S.No | Lab Id | Age | Sex | Address | symptoms | date of onset of symptoms |
|------|--------|-----|-----|-----------------|--------------------------------|---------------------------|
| 1 | 20254 | 55 | F | Keshavrai Patan | High grade fever and body pain | 5 to 6 days |
| 2 | 20255 | 39 | M | Keshavrai Patan | Asymptomatic | 2 days fever |
| 3 | 20256 | 80 | M | Keshavrai Patan | High grade fever | 3 days |
| 4 | 20257 | 70 | M | Keshavrai Patan | High grade fever | 7 Days |
| 5 | 20258 | 16 | M | Keshavrai Patan | High grade fever | 3 Days |
| 6 | 20259 | 35 | M | Arnetha | High gr | 2 days |
| 7 | 20260 | 24 | M | Arnetha | High grade fever | 4 days |

Comparative status of fever cases



Conclusion & Recommendations

JE epidemics have also been documented, such as the outbreaks in India, which caused about 400 cases in 2014 and 1700 deaths in 20052 .There is lack of dedicated staff(MPW,MI &IC) for anti larval activities at grass root level as well as for district level a VBD consultant is required. There is need of regular fever surveillance in village any hike in cases should be reported immediately and activities should begin within 24hrs.IEC should be done before fogging and should be done between morning 7-9am & evening 5-7pm.

JE vectors are exophilic and endohagic in nature. The risk of transmission increase when the human dwellings and animals sheds particularly piggeries are situated very close to each other. When they are situated far from each other, the risk of transmission is reduced. Advocacy meeting (IEC) must include orientation training of ASHA/ AWW and community volunteers. Personnel Protection Measures such as protective clothing, Mats , coils, aerosols and repellents should be used in affected area. Awareness generation and capacity building of local community and field workers. All the reporting units (health institutions) in endemic areas both in public and private sector should further notify all suspected JE cases based on standard case definitions. There should be case investigation and line listing of suspected cases of JE in order to trace these cases back their villages and to take appropriate control measures. Relative increase in pig population and water frequenting birds should alert the local officer. They should share such information with higher authorities and keep vigilance on situation. Water safety measures for drinking water sources in the affected areas; immediate repairs of hand pump and chlorination of water. Considering the risk of transmission of AES through contaminated drinking water, the provision of safe drinking water and proper sanitation are critical for the prevention and control of AES. Intensive IEC required in Arnetha village regarding source reduction.

REFERENCES

1. <https://www.cdc.gov/japaneseencephalitis/index.html>
2. Overview of Japanese encephalitis disease and its prevention. Focus on IC51 vaccine (IXIARO®).
3. Japanese Encephalitis Review Series Neurological Aspects of Tropical Disease.