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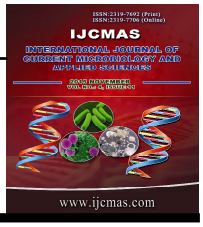

Original Research Article

Dengue Fever Scenario at Varkala Town, Trivandrum

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Keywords

Dengue fever, Aedes mosquito, Fever, Rash, Body pain

A B S T R A C T

There was as suspicious of outbreak dengue fever around Varkala in 2014 from June to December. So many people were admitted with fever, rash, vomiting, body pains, eye pains and joint pains and other ill effects. Only (100) fever cases were admitted during the above period in Sree Narayana Mission Hospital. Immediate laboratory test were conducted to exclude the fevers like malaria, chikungunya card test. Dengue card tests were done for immediate dengue diagnosis was made. There are so many water ponds, coconut fiber home industry present around Varkala. Paddy fields and a little forest and marshy places around sea coast and more over Varkala is a truism centre hence thickly populated town. The above fever cases were admitted in Sree Narayana Mission Hospital, Varkala.

Introduction

Dengue fever is prevalent in the Caribbean and in South-east Asia. Imported cases are seen in the United States with increasing frequency, and indigenous transmission of the virus in the continental United States has been reported occasionally, most commonly in Texas. A most unusual route of entry into the United States was uncovered when infected mosquitoes were found in stagnant water that had accumulated in tires imported from Southeast Asia. Uncomplicated dengue infections is an undifferentiated febrile disease, sometimes accompanied by a rash and arthralgia's or arthritis. The differential diagnosis includes other viral infections, such as rubella. There are four distinct serotypes of dengue virus. Halstead has hypothesized that serial infection with different serotypes triggers immunopathology mechanisms that produce the dengue hemorrhagic fever syndrome. Formerly limited to Southeast Asia, the lethal hemorrhagic form of the disease has occurred in the Caribbean with increasing frequency (Ministerio da Saude, Brazil, 2008).

Transmission

Dengue virus is primarily transmitted by *Aedes* mosquitoes, particularly *A. aegypti*. These mosquitoes usually live between the latitudes of 35^0 North and 35^0 South below an elevation of 1,000 meters. They typically bite during the day, particularly in the early morning and in the evening, but they are able to bite and thus spread infection at any time of day all during the year. Other *Aedes*

species that transmit the disease include *A. albopictus, A. polynesiensis* and *A. scutellaris*. Humans are the primary host of the virus, but it also circulates in nonhuman primates. An infection can be acquired via a single bite. A female mosquito that takes a blood meal from a person infected with dengue fever, during the initial 2–10 day febrile period, becomes itself infected with the virus in the cells lining its gut. About 8–10 days later, the virus spreads to the other tissues including the mosquito's salivary gland and is subsequently released into its saliva. The virus seems to have no detrimental effect on the mosquito, which remains infected for life. *Aedes*a *egypti* prefers to lay its eggs in artificial water containers, to live in close proximity to humans and to feed on people rather than other vertebrates.

Clinical disease begins 4–7 days (range of 3–14 days) after an infective mosquito bite. The onset of fever may be sudden or there may be prodromal symptoms of malaise, chills and headache. Pains soon develop, especially in the back, joints muscles and eyeballs. Fever lasts from 2 to 7 days, corresponding to peak viral load. The temperature may subside on about the third day and rise again about 5–8 days after onset ("saddleback" from). Myalgia and deep bone pain (break bone fever) are characteristic. A rash may appear on the third or fourth day and last for 1–5 days. Lymph nodes are frequently enlarged. Classic dengue fever is a self-limited disease. Convalescence may take weeks, although complications and death are rare. Especially in young children, dengue may be a mild febrile illness lasting a short time (Basilio-De-Oliveria *et al.*, 2005).

A severe syndrome – dengue hemorrhagic fever/dengue shock syndrome – may occur in individuals (usually children) with passively acquired (as maternal antibody) or preexisting non neutralizing heterologous dengue antibody due to a previous infections with a different serotype of virus. Although initial symptoms simulate normal dengue, the patient's condition worsens. The key pathological feature of dengue hemorrhagic fever is increased vascular permeability with plasma leakage into the interstitial spaces associated with increased levels of vasoactive cytokines. This can lead to life-threatening shock in some patients. Circumstantial evidence suggests that secondary infection with dengue type 2 following type 1 infections is a particular risk factor for severe disease (Chen *et al.*, 2004).

The pathogenesis of the severe syndrome involves preexisting dengue antibody. It is postulated that virus-antibody complexes are formed within a few days of the second dengue infections and that the no neutralizing enhancing antibodies promote infection of higher numbers of mononuclear cells, followed by the release of cytokines, vasoactive mediators and procoagulants, leading to the disseminated intravascular coagulations seen in the hemorrhagic fever syndrome. Cross-reactive cellular immune responses to dengue virus may also be involved.

Materials and Method

All the fever cases admitted and tested for malaria, chikungunya and dengue IgM, IgG and Ns1 only by card method, the results for dengue is immediate. All samples stored in freezer at -120°C and screened for various diseases mentioned above. 100 fever cases admitted during 10th June 2014 to 31st December 2014.

Children age group for 3yrs to old 70 years adults, who admitted for observation and

routine test were done including IgM, IgG and NS1 platelets count cases are positive for NS1 and IgM. Age wise and sex wise groups have been separated for prevalence rates of dengue.

Only card test (Rapid test) was done. ELISA, PCR test were not done for malaria, chikungunya card test were carried out and proved negative. Except for dengue, malaria, chikungunya and no other bacteriological test were done because there was an outbreak of dengue.

Results and Discussion

In each group the platelet counts are not markedly decreased hence no platelet transfusion. All are mild dengue fever cases only and symptomatic treatment given and discharged after 12 days.

Recent urbanization of Varkala town, the population in Varkala reached from 80000–90000. So many people are migrating from villages to Varkala town for education, employment, business and became a thickly populated town.

Town is having so many stagnating water ponds and a very good place for mosquitoes breeding. Around the Varkala, so many paddy fields and coconut fiber home industries and make the atmosphere is polluted and having sea shore with marshy places for breeding of mosquitoes. Dengue is caused by *Aedes aegypti* and responsible for zero types. Mild case of dengue reported in Varkala and no serious types such as DHF/DSS and middle aged males are slightly more in getting dengue fever.

Lab diagnosis

Reverse transcriptase-polymerase chain reaction-based methods are available for rapid identification and serotyping of dengue virus in acute-phase serum, roughly during the period of fever. Isolation of the virus is difficult. The current favored approach is inoculation of a mosquito cell line with patient serum, coupled with nucleic acid assays to identify a recovered virus.

Serological diagnosis is complicated by cross-reactivity of IgG antibodies to heterologous flavivirus antigens. A variety of methods are available; the most commonly used methods are E/M viral protein-specific capture IgM or IgG ELISA and the hemagglutination inhibition test. IgM antibodies develop within a few days of illness. Neutralizing and hemagglutination-inhibiting antibodies appear within a week after onset of dengue fever. Analysis of paired acute and convalescent sera to show a significant rise in antibody liter is the most reliable evidence of an active dengue infection (Ministerio de saude, Brazil, 2005).

Immunity

Four serotypes of the virus exist that can be distinguished by molecular-based assays and by Nt tests. Infection confers lifelong protection against that serotype, but cross-protection between serotypes is of short duration. Reinfection with a virus of a different serotype after the primary attach is more apt to result in severe disease (dengue hemorrhagic fever).

There is no antiviral drug therapy. Dengue hemorrhagic fever can be treated by fluid replacement therapy. There is no vaccine, but candidate vaccines are under development. Vaccine development is difficult because a vaccine must provide protection against all four serotypes of virus.

Control depends upon antimosquito measures, e.g., elimination of breeding places and the use of insecticides. Screened windows and doors can reduce exposure to the vectors.

Most of the cases are mild. Treatment is mainly symptomatic. Myalgia is predominant and bothersome but avoids all NSAID drugs for pain. It may add to the hemorrhagic nature of the disease. For pain paracetamol or tramadol may be used (Born and Patrone, 2006).

Hydration is very important. Most of the patients develop dehydration. Bed rest should be advised, water for daily blood counts, liver enzymes and electrolytes and urine output. Only serious cases with very low platelets, bleeding tendencies decreasing urine output and shock need to be treated in a tertiary care centre with facilities for central catheter fluid maintenance and platelet transfusion at the ideal time. No vaccine is available for use now. New vaccine is undergoing clinical trials abroad. Patients can be discharged when he is observed for 48 Hrs. without antipyretics and restoration of vitals and biochemical profile (Ministerio de saude, Brazil, 2008).

Table.1 Dengue prevalence in different age groups and their serological report

Age group	Male	Female	Total cases	Positives in each group M+F	Test done IgM	IgG	NS1	Platelet count	Tornique test
1yr–5y	2	1	3	nil	nil	nil	nil	nil	nil
6yr–10y	1	2	3	1 m+ve 1 f+ve	+ve	nil	+ve	>18000	+ve
11yr–20yr	14	6	20	2f+ve	+ve	nil	+ve	>40000	+ve
21yr–30yr	16	12	28	2f+ve 1m+ve	+ve	-ve	+ve	>15000-18000	+ve
31yr–40yr	6	6	12	1m+ve	+ve	-ve	+ve	>12000	+ve
41yr–50yr	18	5	23	2f+ve 3m+ve	+ve	-ve	+ve	>60000-72000	+ve
51yr–60yr	6	nil	6	1m+ve	+ve	-ve	+ve	>50000	+ve
61yr–70yr	4		4	1m+ve	+ve	-ve	+ve	>60000	+ve
71yr–80yr	1	nil	1	1m+ve	+ve	-ve	+ve	>30000	+ve
Total	**68**	**32**		Total cases +ve in 100 cases is 15 Male-8; Female-7					

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