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Seroprevalence of dengue fever in Rural Amalapuram

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Abstract :

Introduction : Dengue is an acute infectious disease of viral etiology. It is probably, one of the most important arthropod borne viral disease in terms of human morbidity & mortality. The spectrum of the disease ranges from self limiting Dengue fever to more severe forms of Dengue haemorrhagic fever (DHF) or Dengue Shock Syndrome (DSS). Laboratory diagnosis of dengue virus infection mainly depends on detection of virus specific antibodies.

Objective : The aim of the study was screening for Dengue IgM & IgG antibodies in clinically diagnosed / suspected dengue cases and to compare with clinical features.

Results : Out of 150 clinically diagnosed Dengue cases. 12 were positive for Dengue (8%). Of which 3 were positive for IgM, 9 for IgG and 5 for both IgM & IgG. Of the 30 enteric fever cases, 10 were WIDAL positive and 20 were WIDAL negative. Out of 10 WIDAL positive cases, 2 were Dengue IgM positive and in 20 WIDAL negative cases, 3 were positive for Dengue IgM. Similarly among 25 suspected malaria cases, 3 were positive for malarial parasites, of which 1 case showed Dengue IgM positivity. 22 cases were malaria negative of which 2 were Dengue IgM positive.

Conclusion : Screening for Dengue IgM in fever cases revealed the missing cases of Dengue in otherwise not suspected or clinically diagnosed, which shows the need for detection of Dengue IgM antibodies in all febrile illness cases.

Keywords : Dengue fever, Dengue haemorrhagic fever, IgG, IgM antibodies, WIDAL test, Malarial parasite

Introduction :

Dengue is an acute febrile viral disease, known even to common people today. Three decades ago, the health case providers in our country might not have imagined that this condition could be a major health problem. This potentially fatal acute viral infection also called as break bone fever, can cause scary out breaks associated with complications like haemorrhages and shock. Mortality in untreated cases can be 5 % and there is no vaccine for prophylaxis. With the introduction of immuno chromatography, detection of cases in the field setting became easier. Dengue is fast spreading in Andhra Pradesh especially more number of cases are seen in around the rural areas of Amalapuram, East Godavari (dt), Andhra Pradesh. Single, but properly timed blood sample is sufficient to detect Dengue IgM antibodies. IgM responses of Dengue are usually less cross reactive to other flavi viruses, but minimal cross-reactivity to Malaria was reported.

Aims & Objectives :

1. Screening Dengue IgM & IgG antibodies in clinically diagnosed Dengue cases.
2. Screening for IgM antibodies to Dengue in other fever cases which are not clinically suspected as Dengue are evaluated for Malarial parasite (M.P) and WIDAL test to detect cross reactivity / mixed cases.

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Methodology :

The present study was conducted in the Department of Microbiology, KIMS R&F, Amalapuram, East Godavari(dt), Andhra Pradesh from February 2015 – October 2015. Material for the present study consists of 150 clinically diagnosed / suspected as Dengue (study group – I) and 55 cases of fever were evaluated for M.P and WIDAL test attending to medical & paediatric departments (study group – 2).

1. Study group – I : Fever with 2 or more of the following features - Headache, Retro-orbital pain, nausea & vomiting, body pains, rash myalgia, arthralgia, abdominal pain, bleeding tendencies.

2. Study Group – II : Other fever (55 cases) with 2 or more of the following - fever with chills, headache, nausea & vomiting, body pains, rash myalgia.

Inclusion & Exclusion criteria

Inclusion criteria:

1. Individuals how have never suffered from Dengue infection.
2. Both male & female population of any age group.

3. Must be resident of rural area.

Exclusion criteria :

1. Individual who have a strong history of Dengue infection.
2. Individual who have a strong history of Immunization with Japanese encephalitis, Yellow fever, Tick borne encephalitis, to prevent avoneous results because of cross reacting anti bodies.

Sample collection: 5 ml of blood was collected by venepuncture under aseptic conditions into sterile test tube without any coagulant. The blood was centrifuged and clear serum was transferred into vials and stored in the deep freezer till subjected to the test.

- ❖ Dengue IgM & IgG detection was done by using Immounochromatography (SD) and confirmed by ELISA.
- ❖ 30 Enteric fever cases were screened by WIDAL test.
- ❖ In 25 suspected malarial cases, 2 peripheral blood smears were made and stained by Leishman's staining method and looked for ring forms & gametocytes.

Results :

Out of 150 cases clinically diagnosed as Dengue, 12 cases were Dengue positive (8%). Out of this, 7 are from urban and 5 cases are from rural areas. Higher incidence was seen during season. Incidence is seen high in males (8 cases) compared to females (4 cases).

Discussion :

Mesenteric panniculitis has been estimated to affect 1%

Table – I: Total No. of cases

Clinical diagnosis	No. of Patients
Dengue	150
Enteric fever	30
Malaria	25

Table - II: Dengue IgM & IgG seropositives - Study group - I

Test	No. Of Positives
IgM	3
IgG	9
IgM + IgG	5

Table – IV: Clinical features in IgM Positive cases

Clinical features	Dengue	WIDAL Positive	WIDAL Negative	M.P Positive	M.P Negative
Fever	12	10	20	3	22
Headache	10	1	1	0	0
Nausea & Vomiting	3	2	1	0	0
Myalgia	4	0	0	0	0

Table – V: Clinical presentation in Dengue Positive cases

Positive	Bleeding Tendencies	Rash
Only IgM	1	0
Only IgG	1	2
IgM + IgG	1	1

Discussion :

Prevalence of Dengue fever is increasing in rural areas may be due to the habitate of Aedes mosquito, male predominance is seen (2:1) and it is the same conducted by Ekta Gupta et al and by Mahesh kumar et al. High prevalence amongst males is probably due to more out door activities by males in comparison to female which results in more exposure to day biting mosquitoes.

The maximum number of Dengue cases seen in the month of September indicated an active viral transmission during monsoon and post monsoon period as reported earlier. The infection started spreading in August, peacked in October and slowly tapered by December. The seasonality of transmission of Dengue with increased activity in monsoon and post monsoon season was seen in the present study ; in accordance with the reported patterns of Dengue transmission. Seasonal trends seen in the present study were due to the presence of stagnant water during rainfalls which favors mosquito breeding. IgM Positivity indicates acute / recent infection.

Dengue IgM sensitivity among suspected cases indicate active Dengue virus activity. In the present study the the clinical presentation of Dengue was with fever followed by headache, nausea, vomiting, being predominant features. Presence of body aches and rashes are comparatively less. It correlates with study conducted by Neeraja et al. IgM positivity in WIDAL positive cases could be due to anamnestic response, IgM positive cases could be the cross reactivity or might be a co infection. IgM positivity in WIDAL negative and MP negative cases could be the missing cases.

There fore screening for Dengue IgM in fever cases revealed the missing of Dengue in other wise not suspected or clinically diagnosed, which allows the need for detection of Dengue IgM antibodies in all acute febrile illness cases.

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