

## Dengue and its co Infections: A Six Months Study

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Dengue is a major health problem in many parts of tropical world. Dengue is caused by infection with one of the four serotypes of dengue virus (DEN 1-4) which are arboviruses belonging to the Flaviviridae family and are transmitted by mosquito principally *Aedes aegyptii*. Typhoid and malaria are the two diseases which are caused by different organism, one a gram negative bacilli and the other a protozoan and transmitted by different mechanisms. Dengue, Typhoid and Malaria share rather similar symptomatology. To know the prevalence of Dengue infection in and around Davangere, to determine the incidence of co infections i.e. malaria and typhoid fever with Dengue in Davangere. Total of 160 serum samples were studied from July to December 2010 in Department of Microbiology JJM Medical college, Davangere. All the samples were tested for IgM Dengue ELISA and IgG Dengue ELISA. The same samples were also tested for Rapid Malaria Antigen detection and slide agglutination test for rapid detection of *Salmonella typhi*. Out of the 160 serum samples studied 74 samples were positive to IgM Dengue ELISA and 50 samples were positive to IgG Dengue ELISA. 20 were tested positive to Malaria by Malaria Antigen strip test. 10 samples were positive to IgM Dengue ELISA and Malaria Antigen strip test. 8 samples tested were positive to slide agglutination test for rapid detection of *Salmonella typhi*. IgM Dengue ELISA and slide agglutination test for rapid detection of *Salmonella typhi* were positive in 3 samples. Malaria and dengue must be suspected in febrile patients living in or returning from areas endemic for these infections. Dengue and typhoid fever often present with mimicking symptoms especially in early stages of typhoid.

**Key Words:** Dengue, Malaria antigen strip test, Typhoid test.

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Dengue is a major health problem in many parts of tropical world. Dengue is caused by infection with one of the four serotypes of dengue virus (DEN 1-4) which are arboviruses belonging

to the Flaviviridae family and are transmitted by mosquito principally *Aedes aegyptii*<sup>1</sup>. In terms of morbidity, mortality & economic costs, dengue virus infection is the most important mosquito borne virus disease in the world with an estimated 100 million cases per year<sup>2</sup>.

Dengue has a wide clinical spectrum that includes both severe & non severe clinical manifestations. After the incubation period, the illness begins abruptly & is followed by 3 phases

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of illness i.e. febrile critical & recovery places<sup>2</sup>.

Typhoid & malaria are the two diseases which are caused by different organism, one a gram negative bacilli and the other a protozoan & transmitted by different mechanisms. Dengue, Typhoid & Malaria share rather similar symptomatology. However the precise incidence of concurrent Malaria, Typhoid & Dengue fever in most geographical areas is largely uncertain<sup>3</sup>.

The present study is aimed to know the prevalence of Dengue infection in & around Davangere, to determine the incidence of co infections i.e. malaria & typhoid fever with Dengue in Davangere.

### MATERIAL AND METHODS

Total of 160 serum samples were studied from July to December 2010 in Department of Microbiology JJM Medical college, Davangere. It was a cross sectional study. All the samples were tested for IgM Dengue ELISA & IgG Dengue

ELISA. The same samples were also tested for Rapid Malaria Antigen detection and slide agglutination test for rapid detection of Salmonella typhi.

### RESULTS

Out of the 160 serum samples studied 74 samples were positive to IgM Dengue ELISA & 50 samples were positive to IgG Dengue ELISA (TABLE-1).

Out of 160 serum samples, 20 were tested positive to Malaria by Malaria Antigen strip test. In that 15 were positive to Plasmodium falciparum and 5 positive to Plasmodium vivax. 10 samples were positive to IgM Dengue ELISA & Malaria Antigen strip test. 8 samples tested were positive to slide agglutination test for rapid detection of Salmonella typhi (TABLE-2). IgM Dengue ELISA and slide agglutination test for rapid detection of Salmonella typhi were positive in 3 samples.

**Table 1.**

Total Samples	IgG Dengue ELISA	IgM Dengue	Malaria Ag test	Rapid test for <i>S typhi</i>
160	50 (31.25%)	74 (46.25%)	20 (12.5%)	8 (5%)

**Table 2.**

Total Malaria positive samples	Plasmodium falciparum	Plasmodium vivax
20	15 (75%)	5 (25%)

### DISCUSSION

Despite a wide overlap between dengue & malaria, published reports of co infections are scarce in the literature. The most common clinical findings for dengue were fever, myalgia, rash, headache and nausea with prevalence of 77%. Similarly the typical clinical findings for malaria were high grade fever with chills, sweating and headache. Mixed infections with many etiological agents are not uncommon in malaria. Dengue and malaria co infection should be kept in mind in areas

where both diseases are co endemic<sup>4,5,6</sup>. In our study there was concurrent infection in 6.25% with Dengue & Malaria. Concurrent infection with Dengue & Malaria of 2% was seen by Bernard Carme et al<sup>7</sup>.

About 1.8% of patients had concurrent Dengue & Typhoid infection. Several studies had similar results. It seems that the outcome of slide agglutination test for rapid detection of Salmonella typhi for patients with clinical suspicion of Typhoid and Dengue depends on individual host immune responses which become stimulated in febrile conditions associates with malaria fever<sup>8,9</sup>. This memory response could cause positive to slide agglutination test for rapid detection of Salmonella typhi in previously sensitized patients. To rule out dengue with mimicking symptoms or the influence of anamnestic response the practical

use of cultural methods for the diagnosis of typhoid should be emphasized <sup>10</sup>.

Malaria & dengue must be suspected in febrile patients living in or returning from areas endemic for these infections <sup>11</sup>. Dengue and typhoid fever often present with mimicking symptoms especially in early stages of typhoid.

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