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Study of Clinical and laboratory profile of dengue like illness in a tertiary care hospital in West Bengal

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Abstract: *In a dengue endemic area like India , Dengue fever might be confused with other febrile illness like enteric fever, leptospirosis, typhus fever, malaria, chikungunya etc. Many of these illnesses can present in significant numbers after rains, and because of similar early presentations, can cause confusion in decision-making. With global warming, these diseases can assume significant proportions even in non-endemic areas. Recognition of these diseases is important to diagnose them and treat them early, in order to avoid potentially fatal complications. This study is an attempt to highlight important clinical and laboratory features to differentiate between dengue and dengue fever-like illnesses(DLI).*

I. Introduction

Dengue fever is an abrupt onset high fever of 2-7 days duration associated with non- specific symptoms like headache, malaise, retro-orbital pain, nausea, vomiting etc. Majority of patients recover uneventfully. Some cases suffer from severe dengue characterized by low platelets and rising hematocrit detectable before the onset of the subsequent stage of shock, which is an important differentiating feature. Many other tropical illness like enteric fever, leptospirosis, typhus fever, malaria, chikungunya etc may initially present like dengue and create confusion in treatment

Nilratan Sircar Medical College and Hospital being a tertiary care centre, we often get referred cases of fever with oedema along with dengue like manifestations . A number of common tropical illnesses may present early with similar clinical manifestations [1,2], calling for recognition of important characteristics (both clinical and laboratory) to differentiate between them

With this background we took the study to differentiate between dengue and dengue fever-like illnesses.

II. Material And Methods

This was a retrospective study. Children with probable dengue infection upto12 years of age who were admitted in our pediatric ward of NRS Medical College & hospital (West Bengal, India) were included in this study during August to October 2015. This is a tertiary level hospital and provides health care services to four to five districts in west Bengal. Most patients are referred to this apex level institute from periphery for better management.

Our inclusion criteria probable dengue case (defined by WHO as below) with features of capillary leaks (oedema,facial puffiness, ascites,pleural effusion)**.**

Probable case: Acute febrile illness with 2 or more of the following: headache, retro-orbital pain, myalgia, arthralgia, rash, haemorrhagic manifestations, leukopenia AND supportive serology OR occurrence at the same time and location as other confirmed cases of dengue fever

Confirmed case: A case confirmed by laboratory criteria IgM/IgG enzyme-linked immunosorbent assay (ELISA),

Basic blood investigations include a complete blood count (including platelet count), blood glucose, serum electrolytes, liver and kidney function tests, blood culture, arterial blood gas have been done in all patients with probable dengue infection. A peripheral smear for malarial parasite and rapid diagnostic test for malaria were also screened. Serological tests for typhoid fever, leptospirosis and chikungunya were also performed.

Statistical analysis

We analysed and compared different clinical and laboratory parameters in confirmed dengue cases (ELISA positive) and dengue like illness (ELISA negative). Quantitative data was summarized in terms of mean and standard deviation. Qualitative data expressed as percentages. Association of NS1 Ag, IgM, IgG with various clinical manifestations were assessed through chi square test of significance and t-test whichever applicable. $P<0.05$ was taken for statistical significance.

III. Results

Total number of cases were 24.Male outnumber female by 1.2. Among total cases, 8(33.33%) was serologically confirmed dengue case. Rest 16(66.66%) cases present with similar clinical features but serologically negative. Clinical features and laboratory parameters are given in table1 and 2.

symptoms	ELISA +VE	ELISA -VE	P value
Age	5.6(sd2)	7(sd4)	0.364
Bodyache	6/8	9/16	0.936
Headache	5/8	7/16	0.902
Nausea/vomiting	6/8	5/16	0.413
Running nose	4/8	12/16	0.832
Abdominal pain	6/8	9/16	0.936
Hepatomegaly	6/8	10/16	0.94
Splenomegaly	1/8	10/16	0.1
Duration of fever	5.78 (sd2.03)	15.8 (sd3.29)	<0.0001
Duration of swelling	3.37 (sd0.916)	10.125 (sd4.03)	<0.0001

Table:1 clinical profile Vs dengue serology

Parameter	Mean value of Confimed Dengue	Mean value in Dengue like illness	P value
Total leucocyte count	3800±537	14355±1287	<0.0001
Packed cell volume	42±5.2	33±3.1	<0.0001
Platelet count	93231±5432	155353±4643	<0.0001
SGOT	180±35	167±29	<0.343
SGPT	175±32	176±28	<0.938
Urea	28±3	32±8	<0.19
Creatinine	0.6±0.1	0.7±0.1	<1
Serum sodium	135±3	138±6	<0.199
Serum potassium	3.5±0.5	4±1	<0.19

Table2 Laboratory parameter in Dengue and dengue like illness

Out of total 16 dengue like illness cases, 2(12.5%)cases were widal positive, 2(12.5%) cases were positive for IgM chikungunya, one (6.25%) case was positive for ELISA IgM leptospira. Inspite of vast available investigation, 11(68.75%) cases of dengue like illness no etiological diagnosis was possible.

IV. Discussion

During our study period out of total 24 clinical dengue/DHF like cases only one third cases were serologically confirmed cases of Dengue fever and two third cases were serologically negative dengue like illness.This findings was corroborative to Suharti et al. study.

Suharti et al. [3] evaluated 118 patients for serological evidence of dengue, hantavirus, chikungunya, Rickettsia typhi, Rickettsia tsutsugamushi, rubella virus, influenza A virus, and Leptospira who fulfilled the clinical WHO criteria for dengue fever/dengue haemorrhagic fever and it showed that only about 49% of the

patients tested positive for dengue infection serologically and the other 51% of the patients ‘ fulfi lling ’ the WHO criteria for dengue were negative.

During a dengue epidemic not all DFLI test positive for dengue virus [3,4]. Leptospirosis should always be suspected in peculiar epidemiological settings The clinical manifestations of leptospirosis range from a mild self-limiting febrile illness to a severe and potentially fatal illness characterized by jaundice, renal failure, thrombocytopenia, and haemorrhage (Weil ’ s disease). The initial clinical features like fever, headache, chills, myalgia, and arthralgia are not helpful in differentiating dengue fever and leptospirosis [4,5]. Patients with leptospirosis report intermittent and a slightly longer duration of fever, while patients with dengue have continuous fever with chills [5,6]. Patients with leptospirosis can present with a combination of fever, non-oliguric renal failure, and near normal platelet counts [7].

In the first week of the illness of typhoid fever , the clinical features are rather non-specifi c, with headache, malaise, and a rising remittent fever. This step ladder type of fever may not be seen in all patients. An enlarged spleen (assessed clinically) and an elevated ALT level were found to be the strongest predictors of enteric fever in ‘ non-malaria ’ febrile patients [8]. Haematological observations in enteric fever are anaemia, leukopenia, eosinopenia, thrombocytopenia, and sub-clinical disseminated intravascular coagulation. An absolute eosinophil count of 0% can be used as an important diagnostic marker of enteric fever[9,10].

In tropical areas chikungunya, confusion with dengue fever is common, although the 2 diseases present characteristic clinical signs. Chickungunya virus is responsible for a 2-stage disease, consisting of an intense acute stage commonly followed by a long-lasting disabling polyarthritis. The incubation period is short (2 – 6 days), and is followed by an acute stage characterized by a sudden onset high fever, incapacitating polyarthritis, and skin manifestations. Skin manifestations usually start after 2 – 4 days and last for 3 days. They can include a maculopapular rash, diffuse hyperaemia, and oedema of the face and extremities. In chikungunya disease the onset of symptoms is more abrupt, the febrile course shorter, and arthralgia more common than in dengue [11,12]. Thrombocytopenia is found in both, but is more pronounced in dengue fever. In chikungunya fever, anti-CHIKV IgG and IgM antibodies are detected soon after the onset of symptoms.

Our study revealed low platelet count and rising hematocrit has good association to differentiate dengue from other dengue like illness in a resource limited setting. Cases with prolonged fever (>20 days) rarely turns out to be severe dengue. Significant number of dengue like illness cases etiology was undiagnosed. This is an area of research. Other virus or low sensitivity might be the explanation.

V. Conclusion

This study identified simple clinical and laboratory parameters that can assist clinicians to distinguish dengue fever/DHF from dengue like illness. Serial monitoring of platelet count and rising hematocrit can detect dengue/DHF from dengue like illness and facilitate appropriate management of affected patients, particularly in resource-poor settings.

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