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AN ANALYSIS OF DEMOGRAPHIC CLINICAL & HEMATOLOGICAL PROFILE OF DENGUE FEVER

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ABSTRACT: BACKGROUND: Dengue fever is one of the most significant vector borne disease in terms of morbidity & mortality. **METHODS:** The study is aimed at analyzing demographic, clinical presentation and hematological profile of patients with dengue fever admitted in a Chettinad hospital and research institute. **RESULTS:** A total of 50 patients with Dengue fever were admitted in a 3 months period. 70% (35) of patients were between the age of 18 to 35 years and the rest 30% (15) were above 35 years of age with a male to female ratio of 5:1. About 80% of patients were belonging to middle & lower socioeconomic strata & 40% were migrant workers. Fever was the most common clinical presentation. 72% had headache, 16% had gum bleeding, and 4% had malena, 2% of patients each had petechiae, splenomegaly, upper GI bleeding, and jaundice. The most common haematological manifestation was leucopenia and thrombocytopenia. 16% of patients had hemorrhagic manifestations without critical drop (20,000) in platelet count. **CONCLUSION:** Dengue fever continues to be a significant health problem in tropical areas. Most of the patients were males and <35 years age group. Migrant workers & people from middle and lower socio-economic strata are more affected.

KEYWORDS: Dengue Fever, Thrombocytopenia, Bleeding Risk, Dengue Hemorrhagic Fever.

INTRODUCTION: Dengue fever is a most significant vector borne disease in terms of morbidity & mortality.¹ Dengue virus belongs to the family flaviviridae. The family flaviviridae is one of the important arbovirus diseases in terms of geographical distribution, morbidity and mortality. Dengue virus is predominantly transmitted to humans by aedes mosquitoes specifically aedes aegypti. Other mosquitoes in aedes species known for transmission of dengue fever are Aedes albopictus, Aedes polynesiensis and Aedes scutellaris.¹ Under the national vector borne control program dengue fever is now a notifiable disease.² All four serotypes of dengue virus are widely prevalent in our country. An approximate of 50 million dengue infections occur annually and 2.5 billion people live in dengue endemic countries.¹ In the early 2000s, dengue in India progressed from being predominantly restricted to a relatively small number of states in southern (Maharashtra, Karnataka, Tamil Nadu & Pondicherry) and north western regions surrounding Delhi (Rajasthan, Haryana, Punjab & Chandigarh) to a situation where it currently affects large parts of the country.³ Worldwide fatality rates is around 1%, but in our country it is more than 5% fatality rate.¹ The study was undertaken to prospectively analyse the demographic, clinical presentation and hematological profile of patients with dengue fever admitted in a Chettinad hospital and research institute.

MATERIALS AND METHODS: This prospective study was carried out on all cases of dengue fever and dengue hemorrhagic fever admitted in Chettinad hospital and research institute, Chennai from November 2013 to February 2014. The case definition is based on compatible clinical history,

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examination and serologically confirmed dengue fever based on WHO criteria. All patients taken up in this study were serologically confirmed for dengue fever with anti-dengue immunoglobulin (IgM and IgG) by enzyme linked immunoassay (ELISA). Patients were confirmed to have DF or DHF, if IgM alone or both IgM and IgG were positive. Further these patients were prospectively followed for clinical and laboratory profile.

AIMS AND OBJECTIVES:

1. To study demographic and clinical profile of patients admitted with dengue fever.
2. To analyse the haematological profile and bleeding manifestations of patients admitted with dengue fever.

METHODOLOGY:

- It's a prospective observational study of seropositive dengue fever. 50 consecutive serologically (IgM and Ns1Ag) confirmed dengue fever patients are observed for predominant clinical manifestations and their hematological profile. Exclusion criteria are IgM & IgG negative dengue like illnesses, Prior antiplatelet & anticoagulant users, Chronic liver disease, Hypersplenism, ITP, and TTP.

DEMOGRAPHIC FEATURES: 70% (35) of patients were between the age of 18 to 35 years and the rest 30% (15) were above 35 years of age. 84% (42) of patients were male, and 16% (8) were female, with a male to female ratio of 5: 1. Out of 50 patients with dengue fever 60% (30) are from Tamil Nadu, 8% each from Uttar Pradesh, Bihar, and west Bengal. Rest 18% were from Gujarat, Goa, Assam, and Kerala, Nepal etc. Socio economic status of all patients included in the study by using modified Kuppusamy socio economic status score – revision of economic parameters for 2012. Based on this 20% were from upper middle class, 50% were from middle class, 30% from lower middle class.

CLINICAL PROFILE: Fever was the common presentation in all patients. All patients had a fever for at least 3 to 5 days. 72 % (36) had headache, 16% (8) had gum bleeding, 4%(2) had malena, 4% (2) had petechiae, 2% (1) had hematemesis and upper GI bleeding, 2% (1) had psoas hematoma.

Symptoms and Signs	No. of cases
Fever	100% (50)
Headache	72% (36)
Gum bleeding	16% (8)
Malena	4%(2)
Petechiae	2% (1)
Splenomegaly	2%(1)
Upper GI bleeding	2%(1)
Jaundice	2%(1)

Table 1: Clinical manifestations of dengue fever (n=50)

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HEMATOLOGICAL PROFILE: The commonest hematological presentation was leucopenia and thrombocytopenia. 60% (30) had wbc count of <4000 cells /cu.mm with predominant elevation of lymphocytes and monocytes. 72% (36) had thrombocytopenia 24% had bleeding manifestations. The critical threshold of platelet level (i.e <20,000) below which bleeding manifestation are known to occur has been taken into account. 16% of patients had hemorrhagic manifestation without severe drop in platelet count.

Laboratory parameters	No. of cases
Wbc <4000 cells/cu.mm	60% (30)
Hematocrit > 20% of normal	46% (23)
Platelets < 1.5 lakh/cu.mm	72% (36)
Platelets < 20, 000/cu.mm	8% (4)
Platelets < 1.5 lakh but >20, 000/cu.mm	16% (8)
Table 2: Hematological Profile	

DISCUSSION: Dengue fever is a most common vector borne disease in tropical and sub-tropical countries. Dengue and dengue hemorrhagic fever is caused by four antigenically closely related viral serotypes (DEN-1, DEN-2, DEN-3, DEN-4) belonging to the genus flavi virus. The incubation period of dengue after transmission from vector mosquito to human host is 4 -10 days.³ Of the four genotypes of dengue virus type-3 genotype is predominant in India, and was identified between 2003 and 2008 in Delhi, Gwalior, and Hyderabad Primary dengue infection is thought to induce lifelong protective immunity to infective serotype.⁵ Once infected with dengue serotype it does not provide protective cross immunity against other dengue serotypes.¹ so a person living in a tropical country has chances of getting dengue fever four times in his lifetime. Humoral and cellular immunity contributes to virus clearance from body by means of production of antibodies.

Dengue infection can cause a spectrum of illness ranging from mild, undifferentiated fever to illness up to 7 days' duration with high fever, severe headache, retro-orbital pain, arthralgia and rash, but rarely causing death. Dengue Haemorrhagic Fever (DHF), a deadly complication, includes haemorrhagic tendencies, thrombocytopenia and plasma leakage. Dengue Shock Syndrome (DSS) includes all the above criteria plus circulatory failure, hypotension for age and low pulse pressure.³ DHF and DSS are potentially deadly but patients with early diagnosis and appropriate therapy can recover with no sequelae.

In our series a total of 50 serologically confirmed dengue cases were observed in 3 months. Most of the patients were males with a male to female ratio of 5:1. 70% of patients were less than 35 years of age. More than 80% of patients were belonging to middle & lower socioeconomic strata. This reflects the increasing burden of dengue fever on our society. 40 % of the patients with dengue fever in this study were migrant workers. This reflects poor sanitation and water stagnation in dwellings of migrant workers. 16% of patients had hemorrhagic manifestations without critical drop (20,000) in platelet count. Most of the patients observed had thrombocytopenia from day 4 of fever onset. Hematocrit and platelet count is traditionally used as prognostic markers for course and treatment of dengue fever. Though platelet count is taken as an indicator for onset of bleeding manifestation, many patients have bleeding manifestations without significant drop in platelet count. Effective disease prevention program should include vector control by chemical, biological or environmental

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measures.⁶ Purpose of the control is to reduce the vector density below which epidemic disease activity will not occur.⁷ Understanding demographic differences in infection rates and severity of dengue has important implications for planning and implementation of effective public health prevention and control measures.

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