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A Retrospective Study On The Clinical Presentation And Laboratory Findings Of Dengue Fever Among South Indian Rural Population.

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ABSTRACT

Dengue fever studies from rural settings are scarce. The global incidence of dengue has grown dramatically in the recent decade. Half of the world's population is now at risk. India represents significantly a larger burden, accounting for nearly 34% of the global burden of dengue infection. This study aims to retrospectively analyze the clinical and laboratory findings of dengue fever among a South Indian rural population. All cases admitted with dengue fever from January 2019 to January 2021 were retrospectively studied from the hospital record of patients admitted in a rural tertiary care hospital in Tamil Nadu. Laboratory evaluation was done either using NS1 antigen positivity or anti-dengue immunoglobulin M (IgM) antibody positivity. Following tests were conducted; complete blood count, liver function test, renal function test, chest x-ray, and abdominal ultrasound. The majority of them reported myalgia and headache. Around 73% (n=131) had platelet count <50,000/cmm. An increase in SGOT levels was observed in 42.13% of cases while SGPT was elevated in 39.9% of cases. Hematocrit >45% was seen in 41% (n=73) of the cases. The findings from the study show that males are more prone to dengue fever. The geographical pattern of infection is more toward rural areas due to several factors. To decrease morbidity and mortality, early diagnosis and treatment are essential.

Keywords: Dengue fever, Clinical Findings, Retrospective Study, South India, Rural Population

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INTRODUCTION

Dengue fever epidemics are frequent in recent years. An increased incidence is indicated by the involvement of the younger age group [1]. It was first described as a break-bone fever by Benjamin Rush in 1780. The virus belongs to the family of Flaviviridae viruses. It has four serotypes [2]. The principal vector for dengue fever is the Aedes Egyptian mosquito [3]. The presentation of dengue fever is varied and is seen as a spectrum ranging from classic dengue fever to much more severe cases of threatening dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS). The latter two presentations are associated with high mortality [3]/ Successful management of dengue fever relies on early identification of symptoms, laboratory confirmation, and initiating prompt treatment [4,5]. Literature shows evidence of such studies from the Indian settings [6-8] Dengue fever studies from the rural settings are however scarce. This study aims to retrospectively analyze the clinical and laboratory findings of dengue fever among a South Indian rural population.

MATERIALS AND METHODS

All cases admitted with dengue fever from January 2019 to January 2021 were retrospectively studied from the hospital record of patients admitted in a rural tertiary care hospital in Tamil Nadu. The inclusion criteria were; a) age >18 years b) Patients admitted with a confirmed diagnosis of dengue (Both clinical and laboratory) c) Both males and females. Laboratory evaluation was done either using NS1 antigen positivity or anti-dengue immunoglobulin M (IgM) antibody positivity. Following tests were conducted; complete blood count, liver function test, renal function test, chest x-ray, and abdominal ultrasound. All data were entered in excel and analyzed using IBM SPSS v23. Frequency and percentage analyses were done.

RESULTS

Table 1: Age And Sex Distribution Of Dengue Patients

Age (years)	Male	Female	Total
18-20	3	2	5
21-30	11	11	22
31-40	28	20	48
41-50	37	15	52
51-60	33	11	44
>60	4	3	7
Total	116	62	178

Table 1 shows the age distribution of the participants. The majority of them were in the age group of 41-50 years (n=52, 29.2%). Around 65% (n=116) were males while the rest 35% (n=62) were females (Figure 1). Table 2 shows the clinical features of dengue fever patients. Table 4 shows the laboratory parameters of dengue fever patients.

Table 2: Clinical Features Of Dengue Fever Patients

Clinical Features	Number of patients(percentage)
Fever	178(100)
Headache	132(74.15)
Myalgia	144 (80.9)
Retro-orbital pain	102 (57.3)
Nausea/Vomiting	71 (39.9)
Abdominal pain	45 (25.9)
Diarrhoea	18 (10.11)
Conjunctival congestion	79 (44.38)
Abdominal pain	36 (20.22)
Skin Rashes	41 (23.03)
Itching	52 (29.2)
Bradycardia	48 (27)

Bleeding	49 (27.5)
Positive tourniquet test	59 (33.14)
Pleural effusion	44 (24.7)
Ascites	42 (24)
Breathlessness	28 (15.7)
Hepatomegaly	29 (16.3)
Splenomegaly	13 (7.3)

Table 3: Lab Parameters Of Dengue Fever Patients

Laboratory Parameters	No of Patients (%)
Haematocrit > 45%	73 (41.01)
Leukopenia <4000/cmm	91 (51.12)
Platelet Count	
<20000/cmm	72 (40.44)
20000-50000/cmm	59 (33.14)
50000-1 lakh/cmm	48 (27)
1-1.5Lakh/cmm	31(17.4)
Serum Bilirubin >2mg%	33 (18.5)
SGOT(>45IU/L)	75 (42.13)
SGPT(>45 IU/L)	71 (39.9)

DISCUSSION

In India, the first case of dengue was reported in Chennai (formerly called Madras) in the year 1780 while an outbreak was reported in Kolkata (formerly called Calcutta) in 1963. Several outbreaks have been reported since then in various parts of the country [9,10]. All four serotypes have been reported in India since 1956 [11]. Reported expansion of the disease to rural areas has also been reported [12]. In India, dengue is caused by the following vectors; *Aedes aegypti* and *Aedes albopictus* [13]. Classic dengue fever presents with a high fever that has a sudden onset and a rapid increase in severity associated with headache, myalgia, and retro-orbital pain. When an individual was previously infected with a serotype and has an infection with a new serotype, then it leads to dengue hemorrhagic fever. It presents with endothelial leak and bleeding. All cases had a fever. The majority of them reported myalgia and headache. This is similar to the findings reported in other Indian studies [6, 8, 14, 15]. The main laboratory finding in dengue is thrombocytopenia which is due to increased destruction supplemented by decreased production of platelets. Around 73% (n=131) had platelet count <50,000/cmm. Similar findings were reported by Pawar et al [8] and Deshwal et al [14]. An increase in SGOT levels was observed in 42.13% of cases while SGPT was elevated in 39.9% of cases. Similar findings were reported by Pawar et al [8]. A study by Itha et al [16]. However, showed an elevation of these parameters in >95% of the study sample. Studies show that liver injury is due to the multiplication of viruses in the cells of the liver [8]. Hematocrit >45% was seen in 41% (n=73) of the cases. A similar finding was reported by Yung et al [17].

CONCLUSION

The findings from the study show that males are more prone to dengue fever. The geographical pattern of infection is more toward rural areas due to several factors. To decrease morbidity and mortality, early diagnosis and treatment are essential. The study is limited by the smaller sample size and also the retrospective study method. A larger sample size involving larger geographical areas and prospective studies are required for a better understanding of the epidemiology of the disease.

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