A Clinico-Epidemiological Profile of Dengue Fever Cases in a Peri-Urban Area of Chandigarh

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Abstract

Background and Objectives: Dengue fever is an important public health problem in India. In recent years, it has taken epidemic proportions resulting in high morbidity and mortality. In Chandigarh, fever cases were reported during Sept-Nov 2006 with clinical symptoms suggestive of Dengue fever.

Setting: This study was conducted on patients reporting with fever at rural Health Training Centre, Palsora from 1/10/2006 to 15/11/2006.

Subjects: 508 patients presenting with fever at RHTC, Palsora.

Methodology: All fever cases compatible with clinical description of Dengue fever were subjected to routine investigations including platelet counts. Patients were symptomatically treated and patients not showing improvement by day 1 were subjected to Dengue serology for confirmation of diagnosis.

Results: Out of a total of 508 fever cases presenting at RHTC, Palsora,324 patients were found to have clinical findings suggestive of Dengue fever as recommended by WHO.19 patients tested positive on Dengue serology (IgM/IgG Elisa) while low platelet counts i.e., less than 1 lakh were found in 24 patients.

INTRODUCTION

Dengue, an important human arboviral infection, is endemic in many parts of India.

The global incidence of Dengue fever (DF) and Dengue hemorrhagic fever (DHF) has increased dramatically in recent decades.[1] Transportation, industrialization, movement of infected human population/mosquitoes and the changing ecology have facilitated its spread to newer areas. A widespread outbreak of DF/DHF occurred in Delhi and its surrounding areas in 1996. Similar outbreaks were also reported from the neighboring states of Haryana and Punjab. Outbreaks of DF have been reported from Chandigarh too in the previous years.[2] Dengue virus is transmitted by mosquitoes of the genus Aedes. Infection with any of the types of Dengue virus causes a spectrum of illness ranging from no symptoms or mild fever to severe and fatal hemorrhage and shock depending largely on the patient's age and immunological condition. Classical Dengue fever is

reported to present with macular or maculopapular rash in half the cases and may also have hemorrhagic manifestations.[3] The most commonly used test for diagnosis of Dengue fever is the IgM capture ELISA. We report a clinical-epidemiological profile of fever cases that occurred in a periurban area of Chandigarh during October-November 2006.

MATERIAL AND METHODS

The study was conducted at Rural Health training Centre (RHTC) Palsora, Dept of Community Medicine, Govt Medical College and Hospital, Chandigarh from 1st October 2006 to 15th November 2006. All fever cases presenting in the outpatient dept of RHTC, Palsora were included in the study. In each case a detailed history was taken and careful examination was conducted. Routine investigations for fever along with platelet counts were done in each patient with findings suggestive of Dengue fever. Case definition of Dengue /DHF / DSS applied in the present study was as

recommended by WHO$_4$ i.e. An acute febrile illness of 2-7 days duration with two or more of the following manifestations: headache, retro-orbital pain, myalgia, arthralgia, rash, hemorrhagic manifestations, leucopenia. Patients were treated symptomatically and those with platelet counts less than one lakh along with those who did not show any improvement by day four were subjected to Dengue serology (IgM or IgG by ELISA) for confirmation of diagnosis.

A total of 508 patients were examined for fever during the above-mentioned period.

RESULTS

During the study period, 508 patients reported with fever at RHTC, Palsora. Out of these, 324 patients were examined with suspected diagnosis of Dengue fever. The platelet count profile (Table 1) showed that 24 (7.4%) patients had low platelet counts i.e. less than 1 lakh, and 19 patients (5.8%) were found to have positive serology (IgM or IgM and IgG) to Dengue virus by ELISA. Among the 19 patients with confirmed diagnosis 10 were males and 9 were females giving a male to female ratio of 1.1: 1.0 (Table 2). Other causes of fever confirmed during the study period were Typhoid (11 cases), Tuberculosis (11 cases) and viral Hepatitis (4 cases).

Figure 1

Table 1: Profile Of Platelet Count Among Fever Cases Compatible With Description Of Dengue

Platelet count (lakhs/cmm)	Sex		Total (%)
	Male	Female	
< 70,000	02	04	06(0.92)
71,000-80,000	02	01	03(3.4)
81,000-100,000	11	04	15(3.7)
>100,000	144	156	300(91.9)
Total	159	165	324

Figure 2

Table 2: Age And Sex Distribution Of Dengue Serology Positive Patients

Age Group (in years)	Sex		Total (%)
	Male (%)	Female (%)	
0 – 10	04(66.6)	02(33.4)	06(31.6)
11 – 20	0125.0)	03(75.0)	04(21.1)
21 – 30	-	01(100.0)	01(5.3)
31 – 40	03(60.0)	02(40.0)	05(26.3)
>40	02(66.6)	01(33.3)	03(15.7)
Total	10(52.6)	09(47.3)	19(100.0)

It was also observed that thrombocytopenia i.e. Low platelet counts (<100000/cmm) was significantly associated with Dengue serology positivity. (Table 3)

Figure 3

Table 3: Relationship Between Platelet Count And Dengue Serology

Platelet Count (lakhs/cmm)	Dengue Serology		p-value
	Dengue positive	Dengue negative	
<70,000	04(21.0)	02(0.65)	P < 0.05
71-80,000	01(5.3)	02(0.65)	P > 0.05
81-100,000	12(63.1)	03(0.98)	P < 0.001
> 100,000	02(10.5)	298(94.6)	P < 0.001
Total	19	305	

Clinical profile: (Table 4) Fever was the most common clinical presentation, occurring in all patients on presentation. There was no specific pattern of fever and severity of fever ranged from 100 - 104 degrees F. Other common clinical features were headache (52.6%), myalgia (63.1%), vomiting (26.3%) and diarrhea (21.05%). A maculopapular and erythematous rash was seen in only two patients (10.5%). Similar pattern of clinical findings were observed by Daniel et al in Kerala with Fever (96.8%) and Headache (72.2%) topping the list.[5]

Figure 4

Table 4: Clinical Spectrum Of Dengue Serology Positive Patients

S.No.	Symptoms	No. of cases (%)
1.	Fever	19 (100.0)
2.	Headache	10 (52.6)
3.	Myalgias	12 (63.2)
4.	Vomiting	05 (26.3)
5.	Diarrhea	04 (21.1)
6.	Skin rash	02 (10.5)
7.	GI Bleeding	02 (10.5)
8.	Gingival Bleeding	01 (0.05)
9.	Hepatomegaly	02 (10.5)

Course of Illness: All patients were treated symptomatically with analgesics. Patients presenting with very low platelet counts (< 40,000/cmm) were referred to Medical College Hospital for further management. All patients improved symptomatically and there was no mortality.

DISCUSSION

Dengue viruses, belonging to the genus Flavivirus of family Flaviridae has antigenically four distinct serotypes, called DEN-1, DEN-2, DEN-3 and DEN-4. The virus is transmitted to the human beings by bite of infected Aedes Aegypti mosquito and few other members of Aedes species.[1] Dengue virus causes a broad spectrum of illness ranging from mild undifferentiated fever to classical dengue fever, as well as dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS). Each serotype of the virus produces specific life long immunity, but provides only short term cross immunity.

Epidemics of Dengue fever have been reported at 2-3 year intervals in North India, including Chandigarh. It has already attained endemo-epidemic proportions in many parts of India. In the present study the DF cases were distributed among all age groups. Patient presentation was in accordance with that of dengue like illness. However, no significant correlation was found between the proportion of bleeding manifestations among patients with low platelet counts. The same has also been observed by other researchers which possibly indicated the role of factors other than thrombocytopenia in causation of bleeding manifestation in these patients.[6, 7, 8]

All the previous outbreaks of dengue virus infection in Chandigarh[1] have indicated a seasonal trend. Outbreaks of DF and DHF have usually been reported during the post monsoon season and continued till onset of winter (Aug-Nov). Increased humidity and a temperature range of 21.0 degrees C- 33.0 degrees C during these months might be favorable for breeding as well as maintenance of A. Aegypti mosquitoes. Similar climatic

factors have been observed during dengue fever outbreak in Ludhiana, Punjab. A higher temperature within mosquito viability has been shown to give way to more infectious mosquitoes, which bite more frequently.[9]

CONCLUSION

Chandigarh is one of the well-planned and cleaner cities in India. However, increase in population density and construction activities as a part of urbanization have led to the sprouting of slums in the periphery of Chandigarh. These peri-urban slum areas are usually overcrowded and poorly maintained. With the onset of rain there occurs a spurt in the mosquito population owing to availability of many favorable conditions for mosquito breeding, such as discarded tyres, tins and poorly maintained desert coolers.

The present study thus indicates the need for starting continuous, Sero-epidemiological and entomological surveillance in Chandigarh and timely implementation of an effective control programme to prevent Dengue outbreaks in the future.

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