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A Study of Current Outbreak of Dengue Fever in Children

Authors
Tamil Selvan[1], Pawan Kumar.S[2],Giridhar[3], Narayana Swamy [4], Mahesh Kumar[5]
Department of Paediatrics
Sri Lakshmi Multispeciality Hospital, Narayana Superspeciality Hospital, Mallige Hospital,
Maruti Hospital,Bangalore, Karnataka, India
Email:- *drselvantg@yahoo.com*

ABSTRACT

Background: *Dengue is a major international health concern that is prevalent in tropical and sub-tropical countries. The Objective of the present study is to study the clinical profile of dengue fever in children because of lack of such research among children.*

Material and methods: *Prospective study was conducted on all the laboratory confirmed cases of dengue fever during the outbreak of dengue fever from May 2015 to July 2015 among 300 children admitted to 4 major hospitals in Bangalore, Karnataka, India.*

Results: *Among 300 patients studied, majority of them were males (56.6%) and in the age group of 6-10 years (36%). The most common symptoms were fever (97.3%) followed by headache(86.6%) myalgia (86.6%),decreased appetite (83%), retroorbital pain (67.7%), abdominal pain (66.6%) and vomiting (64.3%). The most common signs were skin rash (57.3%) and hepatomegaly (14.3%). The most common complications seen were hepatic dysfunction (11%) followed by pleural effusion (3.6%) and shock (2.3%).Mortality was nil in our study.*

Conclusion: *Clinical profile resembles with other studies but with low severity and most common complication being hepatic dysfunction. Community awareness, early diagnosis and management and vector control measures and vaccination need to be strengthened in order to reduce the increasing number of dengue cases.*

Keywords: *Dengue fever, complications, hepatic dysfunction, shock, skin rash*

Introduction

Dengue infection is a emerging disease and is a major health problem in our country. Globally the incidence of dengue has increased in the recent years. The WHO estimates that presently about two fifths of the world population is at risk for this viral infection.[1.] Dengue fever was first reported by Benjamin Rush in 1780 as "break bone fever." It is a mosquito borne viral infection with four serotypes causing severe dengue fever, dengue with warning signs, and dengue without warning signs. [2] It is estimated that worldwide nearly 2.5 billion people continue to live at risk of contracting the infection while 50 million cases and 24,000 deaths tend to occur in 100 endemic countries. Risk of mortality in treated cases of is

less than 1% while mortality rate among untreated cases escalates to 20%. [3]

India is one of the seven countries in the South-East Asia region regularly reporting incidence of dengue outbreaks due to its high incidence which constantly threatens the health care system. The first confirmed case of dengue infection in India dates back to 1940s, and since then more and more new states have been reporting the disease which mostly strikes in epidemic proportions often inflicting heavy morbidity and mortality.[4]Several fatal forms of the disease, severe dengue fever have been reported in India from time to time in Kolkata, Delhi, and Chennai.[5-8]All the four serotypes of the virus have been in circulation and reported in Tamil Nadu. [9] During all these epidemics infection occurred in all the age groups and more so in adults in the age group of 16–60 years.[10,11] The common symptoms and signs observed were fever, headache, myalgia, arthralgia, bleeding manifestations and shock have also been observed. The exact clinical profile in children is important for patient management and thereby saving the life. The objective of the present study is to study the clinical profile of dengue fever in children.

Material And Methods

This hospital-based descriptive study with prospective data collection were carried out at the 4 major hospitals Sri Lakshmi Multispeciality Hospital, Narayana Super specialty Hospital, Mallige Hospital,

Maruti Hospital, Bangalore, Karnataka, India during the latest outbreak of dengue fever for a period of 3 months from May 2015 to July 2015.All the admitted patients were enrolled on a structural protocol which included symptoms, signs, diagnosis, complications, relevant investigations ,treatment, duration of stay and outcome. Relevant data was entered in a proforma and analyzed. The diagnosis of dengue fever was based on the WHO criteria[3].

Inclusion criteria

1. Children with age group of 0-18 years
2. Admitted with symptoms of dengue fever based on WHO criteria
3. NS1 antigen and IgM dengue antibody-positive cases by ELISA technique

Exclusion criteria

1. Children with IgG dengue antibody positive
2. Children with malaria and enteric fever

Results

A total of 300 cases admitted to the 4 major hospitals in Bangalore during current outbreak from May 2015 to July 2015 were statistically analyzed.

According to the age majority were in the age group of 6–10 years 36% (108/300) followed by more than 10 years with 31%(93/300),among sex males were more common 56.6% (170/300).

With reference to the symptoms fever was the most common symptom with 97.3% (292/300) followed by headache 86% (260/300) and myalgia 86% (260/300). The other predominant symptoms were decreased appetite 83% (249/300), retro orbital pain 67.6% (203/300), joint pain 67.6% (203/300), pain abdomen 66.6%(200/300) and vomiting 64.3%(193/300).

With reference to the signs, majority were with skin rash 57.3% (173/300) followed by hepatomegaly 14.3% (43/300).

With reference to the complications 19% (57/300) of the children had complications, of which most common were hepatic dysfunction 11% (33/300) and pleural effusion 3.6% (11/300).There were no deaths. Average duration of stay in hospital was 6–10 days.

Table 1: Age and sex pattern of patients with dengue fever

Age in years	Male	Female	Total
0-1	3	2	5
1-3	20	18	38
3-6	32	24	56
6-10	62	46	108
10-18	53	40	93

Table 2: Symptoms of dengue fever

Symptoms	Number of Patients
Fever	292(97.3%)
Headache	260(86.6%)
Myalgia	260(86.6%)
Decreased appetite	249(83%)
Joint pain	203(67.6%)
Retroorbital pain	203(67.6%)
Pain abdomen	200(66%)
Vomiting	193(64.3%)
Skin rash	173(57.6%)
Abdominal distension	153(51%)
Leg pain	150(50%)
Bleeding tendencies a.Epistaxis b.Petechiae/Purpura c.Malaena d.Subconjunctival haemorrhage	16(5.3%) 7(2.3%) 5(1.6%) 2(0.6%) 2(0.6%)
Diarrhoea	16(5.3%)
Palpitation	16(5.3%)
Oliguria	13(4.3%)
Breathlessness	11(3.6%)
Altered sensorium	2(0.6%)
Convulsions	2(0.6%)

Table 3: Signs of dengue fever

Signs	Number of Patients
Skin Rash	173(57.3%)
Hepatomegaly	43(14.3%)
Torniquet test (positive)	41(13.6%)
Ascites	34(11.3%)
Spleenomegaly	7(2.3%)

Table 4: Complications of dengue fever

Complications	Number of Patients
Hepatic dysfunction	33(11%)
Pleural Effusion	11(3.6%)
Shock	7(2.3%)
Severe Haemorrhage	2(0.6%)
Renal failure	2(0.6%)
Encephalitis	2(0.6%)

Discussion

Dengue is a major international health concern that is prevalent in tropical and sub-tropical countries. This study describes the clinical profile of current outbreak of dengue fever in children in Bangalore, Karnataka, India. Since the first confirmed case of dengue in India, during the 1940s, intermittent reports from Delhi,[12,13] Ludhiana,[14] Mangalore,[15] Vellore [16] and from other states have been published. The identification is by clinical profile but they can present with varied manifestation.[11-13]

There is a steady increase in the outbreak of dengue fever over the years was noted. This is due to the rapid urbanization with unplanned construction activities and poor sanitation facilities contributing fertile breeding grounds for mosquitoes. Due to an increase in the alertness among medical fraternity following the initial epidemic and the availability of diagnostic tools in the hospital have contributed to the increased detection of cases.[17]

A outbreak of dengue fever during pre monsoon and monsoon season occurred due to stagnation of water, after bouts of rainfall which facilitate vector breeding. These findings highlight that preventive measures against dengue infection should be taken during water stagnation periods after the initial bouts of rainfall and at the end of monsoon.

Among the age and sex majority of the cases were in the age group of 6-10 years with 36% followed by more than 10 years with 31%(93/300),and male to female ratio was 1.3:1 and similar pattern was seen in the retrospective analysis of the 2006 North Indian Dengue outbreak[18]. This may be due to outdoor activities of these children, where chances of getting bitten with mosquitoes are more.

Among the symptoms and signs, fever 97.3%, headache 86.6%, myalgia 86.6% were common symptoms and skin rash 57.3% and hepatomegaly 14.3% were common signs as with other studies.

Among the complications, present study reveals 19% which is less when compared to other studies of Horwarth from Australia[19] and Sharma from India.[20] who reported 63% and 69% respectively.

With reference to the death, none of them died in our study, indicating less severity. This may be due to presence of less virulent organisms during current outbreak.

Conclusion

Clinical profile resembles with other studies but with low severity and most common complication being hepatic dysfunction. Community awareness, early diagnosis and management and vector control measures and vaccination need to be strengthened in order to reduce the increasing number of dengue case.

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