Original Research Article

A study on the clinical features of dengue virus infected pediatric patients

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ABSTRACT

Background: Dengue fever is currently the most important arthropod borne viral disease. During recent outbreaks in India, the clinical manifestations which were shown by the patients were slightly different from those in previous years. The present study was done to analyze the clinical features of all pediatric cases admitted for dengue to three tertiary care teaching hospitals in eastern India, to facilitate early treatment and better outcome.

Methods: A direct history and clinical examination-record based descriptive study was conducted on pediatric patients admitted with signs and symptoms suggestive of dengue fever to two hospitals in West Bengal and one in Bihar, during the period between January 2016 and December 2017. The data obtained were analyzed with correlative studies.

Results: Total 200 patients of Dengue viral infected pediatric patients were included in the study. All these 200 children presented with fever. 126(63%) children had myalgia and arthralgia, 111 (55.5%) had headache, 58 (29%) presented with gastrointestinal infections, 51 (25.5%) had rash and 26 (13%) had hemorrhagic manifestations. Features of shock were present in 14 (7%) children, retro-orbital pain in 13 (6.5%) children and generalized swelling in 9 (4.5%) children.

Conclusions: Increased awareness about the changing clinical features of dengue in pediatric cases in the present scenario as observed in recent epidemics, at least in eastern India is needed to further reduce mortality and complications of dengue cases.

Keywords: Dengue virus, Clinical features, Pediatric patients

INTRODUCTION

Dengue fever is currently the most important arthropod borne viral disease because of its widespread distribution and its potential for extensive outbreaks of life – threatening diseases. It has been known as a disease entity since 1780, when Benjamin Rush described the condition as “break bone fever”. In early nineties suddenly this hitherto unfamiliar infection surfaced in Indian scenario and then disappeared after taking a significant number of tolls. Again, in recent years it has started to demand the attention of all public health care providers having come as a menacing epidemic covering the entire country. It is a mosquito borne, fast emerging, viral infection affecting humans and manifesting in four serotypes (DEN 1-4).

Approximately 2.5 billion people, living mainly in urban areas of tropical and subtropical regions, are estimated to be at risk of acquiring mosquito borne dengue virus...
We

Patient

Clinical

Fever

Admitted

Descriptive

Methods

Care

All

Dengue

And

Pediatric

Were

shown

Outbreaks

Clinical

Not

The

Mortality

(DHF)

(Hemorrhagic

Manifestations

In

Hospitalization

Dengue

Haemorrhagic

Fever

Dengue

Shock

Syndrome

(DSS)

Of

Which

90%

Are

Children. Treated

(DHF) Is

Associated

With

A 1%

Mortality

Rate

While

Mortality

Rate

Among

Untreated

Cases

Rises

Up

To

20%.

The

Various

Manifestations

Of

Dengue

Viral

Infection

May

Not

Have

A

Distinct

Line

Of

Demarcation.

Apart

From

The

Clinical

Features,

Reports

Of

Rare

Presentations

Have

Recently

Become

More

Frequent. During

Recent

Outbreaks

In

India,

The

Clinical

Manifestations

Which

Were

Shown

By

The

Patients

Were

Slightly

Different

From

Those

In

Previous

Years.

There

Have

Been

Many

Reports

Of

Difficulties

In

The

Use

Of

The

Previous

Classification,

Which

Were

Summarized

In

A

Systematic

Literature

Review.

Difficulties

In

Early

Diagnosis

And

Applying

The

Criteria

For

Early

Suspicion

Of

DHF

And

DSS

Particularly

In

Pediatric

Populations,

Together

With

The

Increase

In

Clinically

Severe

Dengue

Cases

Which

Did

Not

Fulfill

The

Strict

Criteria,

Led

To

The

Requirement

For

Thorough

Analysis

And

Reconsideration

Of

Clinical

Features

In

All

Cases

Of

Dengue

Fever

In

Children,

Infants

And

Neonates.

The

Present

Study

Was

Done

To

Analyze

The

Clinical

Features

Of

All

Pediatric

Cases

Admitted

For

Dengue

To

Three

Tertiary

Care

Teaching

Hospitals

In

Eastern

India.

Methods

A Direct

History

And

Clinical

Examination-Record

Based

Descriptive

Study

Was

Conducted

On

Pediatric

Patients

Admitted

With

Signs

And

Symptoms

Suggestive

Of

Dengue

Fever

To

Two

Hospitals

In

West

Bengal

And

One

In

Bihar,

During

The

Period

Between

January

2016

And

December

2017.

Clinical

History

Was

Taken

From

Every

Patient

Properly.

General

Examination

Was

Done.

After

That

We

Had

Conducted

Systematic

Examination

Of

Every

Patient.

We

Had

Taken

Consent

From

The

Family

Members

Of

Each

Patient

Before

Inclusion

Into

The

Study.

We

Had

Taken

Institutional

Ethical

Committee

Clearance

Before

Beginning

Of

The

Study.

We

Had

Done

Routine

Investigations

Of

All

The

Patients.

Mac-ELISA

Based

Estimation

Of

NS1

Antigen

And

IGM

For

Confirmation

Of

Diagnosis

Of

Dengue

Fever.

The

Medical

Records

Were

Perused

For

Collecting

Data

About

These

Cases

Using

A

Pre-Designed

Proforma.

Data

Were

Analyzed

For

The

Clinical

Presentations,

Outcome,

Severity

And

Laboratory

Investigations

Along

With

Correlative

Studies

Of

These

Findings.

Only

MAC-ELISA

(NS1

Antigen/IGM)

Positive

Dengue

Viral

Infections

Under

12

Years

Age

Group

Were

Included

In

The

Study.

Children

With

Fever

Due

To

Other

Causes

Were

Excluded

In

The

Study.

Those

Children

With

Dengue

Virus

Infection

Whose

Family

Members

Did

Not

Give

Permission

Were

Also

Not

Included

In

The

Study.

Results

Total

200

Patients

Of

Dengue

Viral

Infected

Pediatric

Patients

Admitted

In

Three

Tertiary

Care

Teaching

Hospitals,

Two

In

West

Bengal

And

One

In

Bihar,

Were

Included

In

The

Study.

Out

Of

These

200

Children,

5

(Male

3,

Female

2)

Were

Infants,

19

(Male

12,

Female

7)

Were

Toddlers,

41

(Male

23,

Female

18)

Were

Pre-School

Children

And

135

(Male

78,

Female

57)

Were

School

Going

Children.

Total

Male

Pediatric

Patients

Were

116

(58%)

In

Number

And

Total

Female

Pediatric

Patients

Were

84

(42%)

In

Number.

Table 1: Age group wise distribution of children with dengue fever.

<table>
<thead>
<tr>
<th>Age group (years)</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant (below 1)</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Toddler (1-3)</td>
<td>12</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>Pre-school (3-6)</td>
<td>23</td>
<td>18</td>
<td>41</td>
</tr>
<tr>
<td>School age (above 6)</td>
<td>78</td>
<td>57</td>
<td>135</td>
</tr>
<tr>
<td>Total (%)</td>
<td>116</td>
<td>84</td>
<td>200</td>
</tr>
</tbody>
</table>

All these 200 (100%) children presented with fever. 126 (63%) children had myalgia and arthralgia, 111 (55.5%) had headache, 58 (29%) presented with gastrointestinal infections, 51 (25.5%) had rash and 26 (13%) had hemorrhagic manifestations. Features of shock were present in 14 (7%) children, retro-orbital pain in 13 (6.5%) children and generalized swelling in 9 (4.5%) children.

Table 2: Clinical manifestations of dengue fever.

<table>
<thead>
<tr>
<th>Clinical features</th>
<th>No. of patients</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>200</td>
<td>100</td>
</tr>
<tr>
<td>Myalgia/Arthralgia</td>
<td>126</td>
<td>63</td>
</tr>
<tr>
<td>Headache</td>
<td>111</td>
<td>55.5</td>
</tr>
<tr>
<td>Gastro intestinal symptoms</td>
<td>58</td>
<td>29</td>
</tr>
<tr>
<td>Rash</td>
<td>51</td>
<td>25.5</td>
</tr>
<tr>
<td>Haemorrhagic manifestations</td>
<td>26</td>
<td>13</td>
</tr>
<tr>
<td>Features of shock</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>Retro-orbital pain</td>
<td>13</td>
<td>6.5</td>
</tr>
<tr>
<td>Generalised swelling</td>
<td>9</td>
<td>4.5</td>
</tr>
</tbody>
</table>
Most of these children were from urban region (127 out of 200) and only 73 were from rural region. Amongst the 200 pediatric patients admitted and treated only three (1.5%) children died despite all effective measures advocated. Two due to Dengue Shock Syndrome (DSS) and one due to acute respiratory distress syndrome (ARDS).

Our study tallied well with those two studies, ours being 135 belonging to 6 to 12 years age group out of 200 children studied.

The mortality rate in this study was only 1.5% (3 out of 200). Two having died because of DSS and one due to acute respiratory distress syndrome (ARDS). The study done by Raj et al showed that 6 out of 196 died, the causes being 3 due to shock with a ARDS and DIC, 2 due to shock with encephalopathy and DIC, and one due to shock with encephalopathy only.9 In the study of Manjunath et al the mortality was 8.6% compared to Anju et al (mortality 6%) and Ahmed et al (mortality 3%).10,11

Present study got 36.5% of the cases from rural areas and the rest 63.5% of the patients from urban areas only. No study was found to compare with these findings but several press reports agree to our findings.

In Manjunath’s study, the most common presenting symptom was fever (92.3%), followed by vomiting (42.5%) and pain abdomen (38.1%). In the study by Shah et al, again fever was the highest (99.2%), followed by myalgia (64.6%), vomiting (47.6%), headache (47.6%) and pain abdomen (37.5%). In present study the results were that the fever was the highest (hundred percent), followed by myalgia (63%), headache (55.5%) and gastrointestinal symptoms (29%). We also got rash (25.5%), petechial hemorrhages (13%), retro orbital pain (6.5%) and so on. 7% of present cases presented with the features of shock. There was generalized swelling in 4.5% cases.

Current study reveals that like other studies our cases of pediatric dengue patients did not show up encephalopathy, bone marrow depression, acute respiratory distress, myositis, disseminated intravascular coagulation or symptoms of ARDS. On the other hand, unlike other studies we got cases of retro orbital pain, severe arthralgia and significant rashes. Interestingly, all of our child dengue cases invariably presented with fever.

This prove that each epidemic in every region is unique in itself and clinical features do vary from one episode to another. So, no rash decisions regarding the severity or non severity of the disease should be entertained under light of these finding. Each case in every epidemic should be very judiciously looked into and case based decisions should be made everywhere.

**CONCLUSION**

In the recent few years, the world has seen varied clinical presentations of dengue fever in different epidemics, even in the same regions with periods of time. Where some known features are still manifesting, a few atypical features are noted from several parts of the world. A thorough knowledge of the changed signs and symptoms in the present scenario, and timely interventions are
needed to identify the cases, so that its complications, outbreak and mortality can be minimized.

Moreover, community awareness, early diagnosis and management and vector control measures need to be strengthened, especially during peri-monsoon period, in order to curb the increasing number of dengue cases.

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Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES
