Original Research Article

Clinical profile of dengue fever patients in tertiary care hospital of North India

Singh S.P.[1], Nayak M.[2], Singh M.[3], Kshitij R.[4], Singh S.[5]

[1]Dr. Sheo Pratap Singh, Assistant Professor, [2]Dr. Madhu Nayak, Assistant Professor, [3]Dr. Madhu Singh, Lecturer, [4]Dr. Ram Kshitij Sharma, Lecturer, [5]Dr. Sheshadri Singh, Junior Resident; all authors are affiliated with Department of Pediatrics, S. N. Medical College, Agra, India.

Corresponding Author: Dr. Ram Kshitij Sharma, Lecturer, Department of Paediatrics, S. N. Medical College, Agra, India. E- mail: ramkshitijsharma@gmail.com

Abstract

Introduction: In India, Dengue epidemics are becoming more frequent. The majority of dengue virus infection are self limiting, but complications may cause substantial morbidity and mortality. **Methods**: In this retrospective study, medical records were reviewed and analyzed. Patients were classified into dengue with and without warning sign and severe dengue (DHF/DSS). **Objectives**: To assess clinical profile of dengue infection in children less than 18 years of age and to evaluate outcome of dengue fever admitted from June to December 2018, in Department of Pediatrics, Sarojini Naidu Medical College, Agra. **Results**: A total of 50 dengue positive patients were classified into dengue with or without warning signs 42(84%) and 8 (16%) severe dengue cases. The most commonly involved children were male between 5-10 yr (36%) of age group followed by 1-5 yr (34%). Most common clinical manifestation was fever observed in 96% cases followed by rash (66%), pain abdomen (52%) and vomiting in 26% cases.46% cases of dengue had warning signs. Most common clinical and radiological findings were ascites seen in 24% cases followed by pleural effusion. Elevation of Aspartate Transaminase (SGOT) in 82% and thrombocytopenia was seen in 60% cases. **Conclusion:** High grade fever, vomiting, abdominal pain and skin rash with normal or low platelet count were varying clinical presentation. Early clinical suspicion and diagnosis with prompt management accompanied by preventive measures can prevent morbidity and the mortality associated with dengue.

Key words: Dengue with or without warning signs, Severe Dengue, Thrombocytopenia

Introduction

Dengue is a mosquito- borne infection found in tropical and subtropical regions around the world. According to World Health Organization (WHO), it is estimated that over 2.5 billion people (40% of the total world population), in urban areas of tropical countries, are at a risk of developing dengue infection [1]. Most of the cases of Dengue Fever are being reported from Southeast Asian and the Western Pacific Regions [2].

The emergence of dengue in India has gone into epidemic proportions and dengue outbreaks are frequently engulfing different parts of the country in both urban and rural populations [3-8]. Dengue infections may vary from flu-like self-limiting illness to life-threatening dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS) which can be fatal, if left untreated. The mortality rates with dengue have been reported to be as high as 20%. Dengue is caused by one of the four serotypes of the dengue virus (DEN-1 to DEN-4) belonging to the family Flaviviridae. Dengue reinfection is observed to be more severe in children due to immunological phenomenon [9,10]. Infection with one serotype of dengue virus (DEN) provides lifelong immunity to that particular serotype, but results only in partial and transient protection against subsequent infection by the other three serotypes.

It is possible for a person to be infected as many as four times, once with each serotype. It is well documented that sequential infection with different DEN serotypes increases the risk of developing DHF. Ninety percent of DHF infections occur in children less than 15 years of age. There is currently no specific treatment for dengue infection, although several potential vaccines are in

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development; therefore, the only method of preventing Dengue transmission is vector (mosquito) control [11-13]. In recent years varied presentations of dengue have been reported. Many atypical presentations have led to delayed suspicion and diagnosis of dengue. Some presentations have been completely different from any of the features of dengue described until now in literature [9-10].

We retrospectively analyzed Dengue serology positive cases admitted in Department of Pediatrics, Sarojini Naidu Medical College, Agra, from June to December 2018, to assess the clinical profile of patients.

Material and Methods

Study Type: This is a retrospective review study.
Study Sample: A total of 50 patients of dengue, admitted in Pediatrics ward wereincluded in the study randomly.

Sample Collection: A detailed history and clinical examination was recorded on structured proforma. Hematological and biochemical investigations were done at the time of admission and were followed daily or at times twice daily. Signs of plasma leakage were assessed by Packed Cell Volume, chest radiograph and abdominal ultrasonography and serum albumin. Specific investigations were performed in patients who presented with neurological involvement (cerebral spinal fluid) analysis, neuro-imaging or hepatic failure (viral markers, peripheral smear and serology for *Plasmodium falciparum*, typhoid fever). Patients were classified as dengue fever without warning signs and with warning signs and severe dengue. Laboratory diagnosis of dengue was established by demonstration of NS1 antigen and specific antibodies to dengue in serum.

Inclusion criteria: Children in the age group of 0-18 years admitted with symptoms of dengue fever based on WHO criteria. NS1 antigen and IgM dengue antibody positive cases by ELISA technique.

Exclusion criteria: Patient with co-infections like malaria, typhoid or any co-morbid diseases were excluded.

Result

A total of 50 patients admitted between July to December 2018 were studied and analyzed.

The majority of cases were admitted during rainy season, in the month of June to December with fever being the most common complaint (96%) followed by vomiting (52%) and abdominal pain (26%), Many atypical presentations were noted like abnormal body movement in (4%) of cases, tonic- clonic seizures and history of gastrointestinal bleed, headache, vomiting, loose stools, cough and cold were less common associated features.

In our study, the majority of patient were positive for NS1 (72%) followed by IgM antibody (28%) as a large number of patient present within 4-5 days of fever. Serum IgG was estimated in those children who presented with history of fever 7-10 days (Table-3). Total mortality observed was 4% (2/50), due to severe dengue with shock and bleeding.

Table-1: Epidemiological profile of dengue patients

Parameter	Variables	Numbers(n=50)	Percentage (%)	
Age distribution	0-1 year	6	12%	
	1-5 year	17	34%	
	5-10 year	18	36%	
	10-18 Year	9	18%	
Sex	Male	35	70%	
	Female	15	30%	
Duration of hospitalization	0-6 days	42	84%	Mean duration of stay 3.08 days
	>7 days	8	16%	
Classification	DF with warning sign	23	46%	
	Dengue without warning sign	19	38%	
	Severe Dengue fever(DHF)	8	16%	

Most of the patients were male (70%) with females only (30%), out of 50 patients, 16% cases were of severe dengue with hospitalization duration more than 7 days, followed by 46% were case of dengue with warning sign that required

hospitalization for less than 7 days. Most commonly affected children were between 5-10 yr (36%) of age group followed by 1-5 yr (34%). 06 (12%) patients were under one year of age (Table-1).

Table-2: Clinical features of dengue patients.

Signs	Number(50)	Percentage
Fever	48	96%
Skin Rash	33	66%
Vomiting	26	52%
Pain In Abdomen	13	26%
Cough And Cold	9	18%
Headache	8	16%
Loose stool	2	4%
Difficulty in Breathing	4	8%
Nasal Bleeding	5	10%
Abnormal Body Movement	2	4%
Altered sensorium	5	10%

Table-3: Laboratory Parameters of Dengue Patients.

Dengue serology	Positive	Percentage
NS 1 POSITIVE	36	72%
NS1 POSITIVE + ANTIBODY (IgM, IgG)	14	28%
IgG ANTIBODY	6	12%
Laboratory Parameter	Observation	Numbers
Hb (Hemoglobin)	Mild Anemia Moderate Anemia Severe Anemia	14 1 1
TLC (Total leukocyte count)	Leukocytosis (>11000) Leukopenia (<4000)	14 6
PCV (Packed cell volume)	>38.5 <38.5	3 47
SGOT	50-250 >250	30 11
SGPT	50-250 >250	22 7
Platelet count	50000- 1 lakh <50000	30 13

On analyzing the lab parameters, 32% cases were anemic, with 2% of cases had severe anemia (Hemoglobin <5gm %). Severely anemic patients required PRBC transfusion along with management of severe dengue. In complete blood count, 60% patients had normal leukocyte count, with leukocytosis in 28% cases and leukopenia was seen in 12% cases. Among liver enzymes, SGOT was elevated in large proportion of cases (82%) as compared to SGPT which was only raised in 58% of cases. SGOT was very high (>250 IU/L) in 11 patients, while SGPT (> 250IU/L) was found only in 7 children. Platelets count below 1 lakh was seen in 60% cases while 26% patients had thrombocytopenia (<50000) associated with severe dengue (table-3)

Table-4: Radiological parameters of dengue patients.

Radiological findings	Number	Percentage
Ascites	12	24%
Hepatomegaly	9	18%
Splenomegaly	9	18%
Hepatosplenomegaly	5	10%
Pleural effusion	11	22% (right-7, left-2, B/L-2)
Gallbladder wall edema	5	10%
Pericardial effusion	1	2%

The most common physical and radiological finding was ascites (24%), followed by pleural effusion (right side) as compared to left side. In case of pleural effusion, children had complaints of difficulty in breathing in the form tachypnea and mild subcostal retraction. Hepato-splenomegaly was common clinical finding in 18% cases, 5% dengue cases had gallbladder wall edema with sludge on ultrasonography. One case of severe dengue had pericardial effusion along with fluid in other serous cavities (Table-4).

Discussion

In this present study, the most common age group affected was 5-10 years, is similar to other Indian studies [14]. Male to female ratio was 2.33:1, over all male predominance was observed by Sahana et al and kabilan et al [19-20]. We observed in our study that dengue fever presented with varying manifestation. Fever was most common, vomiting, hepatomegaly, bleeding, thrombocytopenia, raised liver enzymes, ascites and pleural effusion were the predominant clinical and laboratory findings in our patients and the similar findings were reported in previous studies [14-19].

Laboratory parameter packed cell volume (PCV) regularly used to evaluate plasma leakage was above 38.5 in 94% cases.The elevation of SGOT was more compared to SGPT in the present study.Very high levels of SGOT and SGPT indicates severity of the disease.

The most common bleeding manifestation in our patients was epistaxis, which was in concert with that reported by Kulkarni et al [15]. However, Agarwal et al have reported hematemesis as the most common manifestation [14]. Average duration of hospitalization in our patients was 3-5 days, similar to the study by Manjith et al (4.9 days) and Ratageri et al. (5.4 days) [16, 17]. Altered sensorium was present in five patients and convulsions were present in two of these patients. Pancharoen et al have earlier reported altered sensorium (83.3%) as the most common neurological finding, followed by seizures [18]. In present study thrombo-cytopenia was the most common laboratory finding observed in 60% cases, similar to Misra GK et al[22]. In USG right sided pleural effusionwas seen which was similar to finding of Joshi et al[23]. In present study most common serology test positive is NS1 in 72%, IgM was positive in 28% cases and 14% patients had mixed positivity (NS1 & IgM +- IgG) (Table-2). In present study mortality rate was 4%.

Conclusion

This study concludes that male children in the age group of 5-10 years were commonly affected. The common symptoms observed were fever, vomiting, abdominal pain, skin rash, epistaxis, decreased appetite and headache. Commonest signs noted were skin rash and ascites. The common complications presented were hepatic dysfunction and shock with low mortality indicating the presence of less virulent organisms.

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