

Clinical profile of dengue patients: A hospital based study

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Abstract

Context: For most of the patients, dengue is a self-limiting viral fever, but in some patients, it results in a life threatening condition called as dengue hemorrhagic fever or dengue shock syndrome. **Objective:** We attempted to determine the common and atypical clinical and laboratory features in children suffering from dengue fever, which will help in early diagnosis and management of patients suffering from dengue infection. **Design:** Hospital based descriptive, cross-sectional study conducted from January 2014 to December 2014. **Setting:** Tertiary referral teaching hospital. **Patients:** All patients between 1-month and 12 years admitted in pediatric ward with symptoms suggestive of dengue and who turn out to be positive for NS1 antigen alone or NS1 and immunoglobulin M antibody against dengue were included in the study. Data regarding relevant history and clinical examination and outcome and relevant investigations were collected. **Results:** Of 250 children included in the study, 145 (58%) were male and 105 (42%) were female. The most common presenting complaint was fever (92.8%), followed by abdominal pain (46.4%). The most common clinical sign was pyrexia followed by relative bradycardia (37.6%) and hypotension (26.4%). On laboratory investigation, the most common abnormality detected was leucopenia (81.6%) followed by thrombocytopenia (69.2%). **Conclusion:** A high index of suspicion is required on the part of treating pediatrician to diagnose dengue early and treat accordingly to prevent mortality due to dengue.

Key words: Atypical manifestations, Children, Dengue hemorrhagic fever, Dengue infection, Dengue shock syndrome

Dengue is the most rapidly spreading mosquito-borne viral disease in the world. An estimated 50 million dengue infections occur annually, and approximately 2.5 billion people live in dengue endemic countries [1]. There are four distinct, but closely related serotypes of the virus that cause dengue (DEN-1, DEN-2, DEN-3, and DEN-4). However, cross-immunity to the other serotypes after recovery is only partial and temporary. Subsequent infections by other serotypes increase the risk of developing severe dengue [2]. The common clinical features of dengue are high grade fever, headache, myalgia, abdominal pain, and retro-orbital pain which are similar to other viral illnesses. Furthermore, the initial presentation is similar even in patients of dengue hemorrhagic fever and dengue shock syndrome. Besides this, dengue can also present with atypical clinical features such as jaundice, convulsions, and altered consciousness [3]. This study was carried out to evaluate the common clinical presentation, and to study atypical clinical and laboratory features associated with dengue viral infection so that early intervention and better case management can be done in those who are likely to have complications of dengue viral infection.

METHODS

This hospital based descriptive, cross-sectional study was conducted in a tertiary care teaching hospital from January

2014 to December 2014. Permission from the College Ethical Committee was taken, and consent from parents or primary caretaker was taken before enrolling the child for study. All the patients admitted with symptoms suggestive of dengue such as fever, headache, myalgia, abdominal pain etc. were investigated for dengue infection. NS1 antigen was done in every patient of clinically suspected dengue having at least 24 h of fever while enzyme-linked immunosorbent assay (ELISA) dengue immunoglobulin M (IgM) and dengue IgG were done only in patients with history of fever for more than 1-week. Patients between 1-month and 12 years of age and positive for dengue ELISA IgM or NS1 antigen with or without IgG were included in the study. Patients with age <1-month or more than 12 years or positive for dengue IgG alone were excluded from the study.

A detailed clinical history was taken from all the patients followed by thorough clinical examination. A complete blood count, liver function tests, kidney function tests, X-ray chest, and ultrasonography abdomen were done in every patient confirmed of dengue. Cerebral spinal fluid (CSF) examination was limited to patients showing features of encephalitis. Management of patients was done according to World Health Organization (WHO) standard guidelines 2009. Patients were classified as per guidelines and blood pressure, and heart rate were monitored 1 h in patients of dengue hemorrhagic fever and

dengue shock syndrome while 6 h in other patients. Intravenous fluids were given as per WHO guidelines and inotropes were used in fluid resistant shock. Data were collected with daily records of the patient and analyzed using Epi info software.

RESULTS

A total of 250 cases were studied during the course of 12 months, out of which 145 were male (58%), and 105 (42%) were female. The mean age of children in the study was 5.68 ± 1.59 years. Patients presented with following symptoms in decreasing order of frequency - fever (92.8%), abdominal pain (46.4%), vomiting (38.8%), headache (36%), dyspnea (26%), palpitation (13.6%), and puffiness of face (12.8%), epistaxis (9.6%), melena (4.8%), and altered consciousness (2%). The findings on clinical examination were pyrexia (96.8%), relative bradycardia (37.6%), hypotension (26.4%), palpable liver (26.4%), petechial rash (23.2%), abdominal tenderness (22.4%), abdominal distension (9.6%), decreased air entry (8.8%), and altered consciousness (2%) (Table 1). The laboratory findings were leucopenia i.e., total leucocyte count below $5000/\text{mm}^3$ (81.6%), thrombocytopenia i.e., platelet count <1.5 lacs (69.2%), raised alanine transaminase (58.4%), abnormal prothrombin time (6.4%), hyperbilirubinemia (6.4%), and pleural effusion (21.6%), and ascites (12.8%) on ultrasonography chest and abdomen respectively (Table 2). Patients presenting with atypical symptoms were also investigated to rule out other infections such as malaria, hepatitis A, B, C, typhoid, etc. depending on the presentation. Of 250 patients, 240 recovered completely, and there were 10 deaths, four because of encephalitis and six because of a dengue shock syndrome with multi-organ failure. The diagnosis of encephalitis was confirmed with the help of CSF analysis and serological investigations. Six children developed shock which was resistant to fluid and inotropes and progressed to multi organ failure.

DISCUSSION

Dengue is now endemic in many countries of the world; however, most of the cases are reported from South-East Asia and Western Pacific region [2]. In past two decades, India has become endemic for dengue and many authors had reported periodic epidemic breakouts in various geographical areas in India [3-8]. Ours is a tertiary care center located in a rural area of Maharashtra, and we faced an epidemic of dengue patients in the year 2014. The symptoms and signs of dengue are now changing and there are patients presenting with atypical symptoms such as jaundice, altered consciousness, upper respiratory tract infections, etc.

With the use of standard guidelines for the management of dengue patients, the mortality has been decreased. The mortality in our study was 4% (10 out of 250) which was similar to that reported by other Indian authors [9-12]. Beside

Table 1: Frequency of signs in dengue patients

Signs	Frequency	%
Fever	242	96.8
Relative bradycardia	94	37.6
Hypotension	66	26.4
Palpable liver	66	26.4
Petechial rash	58	23.2
Abdominal tenderness	56	22.4
Abdominal distension	24	9.6
Decreased air entry	22	8.8
Altered consciousness	5	2

Table 2: Abnormal laboratory findings in dengue patients

Investigation	Frequency	%
Leucopenia	204	81.6
Thrombocytopenia	173	69.2
Serum ALT raised	146	58.4
Abnormal prothrombin time	16	6.4
Hyperbilirubinemia	16	6.4
Ultrasonography		
Pleural effusion	54	21.6
Ascites	32	12.8
CSF examination		
Encephalitis	5	2

CSF: Cerebral spinal fluid, ALT: Alanine aminotransferase

the common clinical features of fever, abdominal pain, headache, hypotension, palpable liver etc., we would like to bring attention to other atypical manifestation of dengue such as relative bradycardia, altered consciousness, and jaundice. Relative bradycardia was found in 37.6% of our patients, similar finding of bradycardia was also reported by other authors [13,14].

Neurological involvement was found in five patients out of whom four patients expired in our study. Neurological involvement in form of encephalitis, and Gullian Barre syndrome had been formerly reported by other Indian authors [9,15]. Elevated liver enzymes is commonly seen in dengue patients and this finding was found in 58.4% of our patients [9,16,17]. Acute hepatic failure, a rarely reported manifestation of dengue hemorrhagic fever was diagnosed in ten of our patients. Deranged liver function in dengue infection can be a result of the direct effect of the virus on liver cells or the unregulated host immune response against the virus. Fulminant hepatic failure occurs because of acute severe hepatitis and massive necrosis of the liver, causing hepatic encephalopathy and even death [18].

A combination of fever, thrombocytopenia and hypotension was the most common manifestation which was seen in our study. Most of the patients recovered with the help of symptomatic

treatment and did not require any platelet or plasma therapy. A patient who developed fulminant hepatic failure were given plasma therapy as per requirement. Only 18 patients whose platelet count was below 25000/mm³ were given platelet therapy. Though the role of giving platelet concentrate is controversial, we still gave them in patients suffering from bleeding and having a platelet count <25,000/mm³ [19,20].

We were unable to classify the type of dengue virus due to limited resources and also there is concern regarding dengue IgM antibodies detection as it has limitations due to cross-reactivity between other circulating flaviviruses.

CONCLUSION

The WHO standard guidelines help to classify and manage dengue patients rationally, but the management of patients presenting with atypical features like encephalopathy and hepatic failure are not described. Thus, it becomes essential on the part of treating pediatrician to suspect and have knowledge of the atypical manifestation of dengue for the early diagnosis and proper management of the patient.

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