International Journal of Medical and Health Research
ISSN: 2454-9142
Received: 28-09-2018; Accepted: 30-10-2018
www.medicalsciencejournal.com
Volume 4; Issue 11; November 2018; Page No. 150-153

Prevalence and clinical outcomes of the childrens suffered by dengue fever in north Indian population

Dr. Akhilesh Kumar[1], Dr. Alka Singh[2*]
[1] Senior Resident, Department of Paediatrics, Nalanda medical college and Hospital, Patna, Bihar, India
[2] Associate Professor & HOD, Department of Paediatrics, Nalanda Medical College and Hospital, Patna, Bihar, India
[*] Corresponding Author: Dr. Alka Singh

Abstract
The resurgence of dengue has been observed in India and varied clinical presentations are being reported in the outbreaks reported from different geographical locations. Hence based on the reported findings the present study was planned to evaluate the prevalence and clinical outcomes of the childrens suffered by dengue fever.
The study has planned in NMCH Patna from August 2016 to August 2017. The 50 childrens detected with dengue were enrolled in to the study. The age group of the patients are below 15 years. The patients visited to Out Patient Department (OPD) and in-patient department (IPD) of a tertiary care hospital in North India were considered in the study. All the patients are informed consents. The entire patient's clinical history was collected.
Increase in the number of dengue cases over the past few years has been attributed to rapid unplanned urbanization with unchecked construction activities and poor sanitation facilities contributing fertile breeding areas for mosquitoes. Dengue is taking epidemic form in India. It is one of the common acute febrile illnesses seen in India like enteric fever, malaria, leptospirosis, and viral hepatitis. Symptoms like fever, vomiting, headache and musculoskeletal pain, haemorrhagic tendencies, hepatomegaly, macular rash, pleural effusion and ascites are commonly the presenting features of dengue fever. Laboratory findings may reveal hemo concentration, elevated liver enzymes and thrombocytopenia. Early diagnosis, monitoring and prompt supportive management can reduce mortality in dengue.

Keywords: dengue, fever, India, epidemic, children's

Introduction
Dengue fever is a common communicable disease characterized by occurrence of high fever, severe body aches and intense headache. It is a very common disease that occurs in epidemic form from time to time. Delhi and parts of North India experienced a large number of cases of Dengue in 1996, 2003 and 2006. The disease is quite severe in young children as compared to adults. It is a disease which occurs throughout the world except in Europe and affects a large number of people. For example, it is estimated that every year, 2 crore cases of Dengue fever occur in the world. Death rate varies from 5 per 100 cases to 30 per 100 cases.
It is caused by a virus (Dengue Virus) which has got four different types (Type 1,2,3,4). Common name of the disease is 'break-bone fever' "(Haddi Tod Bukhar)" because of severe body and joint pains produced. Spread Just like in Malaria, Dengue fever is also spread by bites of mosquitoes. In this case, the mosquitoes are "Aedes" mosquitoes which are very tough and bold mosquitoes and bite even during day time. This disease occurs more frequently in the rainy season and immediately afterwards (July to October) in India. The Dengue virus is present in the blood of the patient suffering from Dengue fever. Whenever an Aedes mosquito bites a patient of Dengue fever, it sucks blood and along with it, the Dengue virus into its body. The virus undergoes further development in the body of the mosquito for a few days. When the virus containing mosquito bites a normal human being, the virus is injected into the person's body and he/she becomes infected and can develop symptoms of Dengue fever [1].
Dengue presents with sudden onset of fever, severe headache, muscle and joint pains (severe pain that gives it the nick-name break-bone fever) and rash on body. There may also be gastritis with abdominal pain, nausea, vomiting, or diarrhoea.
The period to be really watchful is after the first 2-4 days called the critical phase as the fever reduces. That is when shock develops. Shock occurs as the fluid portion of the blood (plasma) leaks into the abdomen, lung spaces etc. This fluid leak apart from causing shock can cause abdominal distension and respiratory problems. Bleeding can also occur if the shock is undetected or not treated appropriately. Low platelet count per se does not cause bleeding. During the recovery phase a red itchy rash can develop on the legs [2].
The characteristic symptoms of dengue are sudden-onset fever, headache (typically located behind the eyes), muscle and joint pains, and a rash. The alternative name for dengue, "breakbone fever", comes from the associated muscle and joint pains. The course of infection is divided into three phases: febrile, critical, and recovery [3].
The febrile phase involves high fever, potentially over 40 °C (104 °F), and is associated with generalized pain and a headache; this usually lasts two to seven days. Nausea and vomiting may also occur. A rash occurs in 50–80% of those with symptoms in the first or second day of symptoms as

flushed skin, or later in the course of illness (days 4–7), as a measles-like rash. A rash described as "islands of white in a sea of red" has also been observed. Some petechiae (small red spots that do not disappear when the skin is pressed, which are caused by broken capillaries) can appear at this point, as may some mild bleeding from the mucous membranes of the mouth and nose. The fever itself is classically biphasic or saddleback in nature, breaking and then returning for one or two days [4].

In some people, the disease proceeds to a critical phase as fever resolves. During this period, there is leakage of plasma from the blood vessels, typically lasting one to two days. This may result in fluid accumulation in the chest and abdominal cavity as well as depletion of fluid from the circulation and decreased blood supply to vital organs. There may also be organ dysfunction and severe bleeding, typically from the gastrointestinal tract. Shock (dengue shock syndrome) and hemorrhage (dengue hemorrhagic fever) occur in less than 5% of all cases of dengue, however those who have previously been infected with other serotypes of dengue virus ("secondary infection") are at an increased risk. This critical phase, while rare, occurs relatively more commonly in children and young adults [5].

The recovery phase occurs next, with resorption of the leaked fluid into the bloodstream. This usually lasts two to three days. The improvement is often striking, and can be accompanied with severe itching and a slow heart rate. Another rash may occur with either a maculopapular or a vasculitic appearance, which is followed by peeling of the skin. During this stage, a fluid overload state may occur; if it affects the brain, it may cause a reduced level of consciousness or seizures. A feeling of fatigue may last for weeks in adults [6].

The WHO 2009 classification divides dengue fever into two groups: uncomplicated and severe; though the 1997 WHO classification is still widely used, classifying dengue in to 3 groups: dengue fever (DF), dengue haemorrhagic fever (DHF) and dengue shock syndrome (DSS).

The resurgence of dengue has been observed in India and varied clinical presentations are being reported in the outbreaks reported from different geographical locations. Hence based on the reported findings the present study was planned to evaluate the prevalence and clinical outcomes of the childrens suffered by dengue fever.

Materials & Methodology

The study has planned in NMCH Patna from August 2016 to August 2017.The 50 childrens detected with dengue were enrolled in to the study. The age group of the patients are below 15 years. The patients visited to Out Patient Department (OPD) and in-patient department (IPD) of a tertiary care hospital in North India were considered in the study. All the patients are informed consents. The entire patient's clinical history was collected.

The inclusion and exclusion criteria for the study were as follow:

Inclusion Criteria

- Patients admitted with fever.
- Patients below 15 years of age
- Both males and females

Exclusion Criteria

- Patients above 15 years of age
- Children with pre-existing haematological illnesses

For each patient, basic demographics (name, age, sex, address) was collected. Presenting complaints and examination were documented. Serial laboratory investigations were recorded. Radiological investigations like ultrasound abdomen and chest X-ray was taken into consideration if available. Details of co-infections/ alternate diagnosis considered at admission/discharge were also recorded.

Results & Discussion

The data from the 50 patients suffered from the dengue fever referred in Department of Paediatrics were collected and presented below.

Dengue fever is an important disease of global concern causing major outbreaks with mortality and morbidity in endemic countries. Our study was done to determine the clinical and laboratory profile of children during an outbreak and after for a total period of one year. 50 cases were included in the study, of which male preponderance was seen. This finding was on par with the findings of many studies and explained by the traditional full covering of the surface of skin in females when compared with male children. Males are exposed more to the mosquitoes during playing outside in open fields.

The most common age group affected was 8-11 years indicating the school activity of these group and exposure to breeding places of mosquitoes during playing. Increased number of cases in September and august is explained by more rainfall during the months and it's the breeding season of Aedes mosquitoes the vector in dengue fever [7].

Table 1: Demographic Details of the Childrens

Age	No. of Cases
<3 years	2
4 -7 years	13
8-11 years	23
>11 years	12
Total	*50*
Gender	
Male	31
Female	19
Total	*50*
Duration of hospital stay	
0-3 days	11
4-6 days	33
>6 days	6
Total	*50*
Day of admission	
0-3 days	14
4-6 days	23
>6 days	3
Total	*50*
Classification	
Non Severe DF	45
Severe DHF	5
Total	*50*

Table 2: Signs & Symptoms Observed in No. of Cases

Signs and symptoms	Non severe dengue	Severe dengue
No. of Cases	45	5
Fever	45	5
Myalgia	41	4
Vomiting	42	4
Abdominal pain	43	3
Petechiae	38	3
Bleeding manifestations	35	3
Retro orbital pain	31	3
Hepatomegaly	21	4

Regarding to the clinical framework, the single symptom form of the disease was most evidenced, the variable intensity fever is the more constant sign for all cases, sometimes this could be the only sign presented. Other symptoms like the rash, the headache, the retro-ocular pain, the arthralgia and myalgia and the positive loop test, are observed in a higher amount of patients with positive IgM, which is consistent with previous results [8-9].

Boys were more commonly affected in this study group and they also had higher tendency to have severe illness. Similar male preponderance was noted in other studies which may be attributed to the presence of more exposed area leading to more significant chance of mosquito-borne diseases [10-11]. Majority of the children belonged to the 6-12 age group which was also reported in other studies [10, 12].

Fever was the most common symptom. Vomiting and anorexia were also commonly seen in our patients. Other widely recognised symptoms were arthralgia, abdomen pain and headache. This symptom pattern is similar to those reported in several studies [13]. Tourniquet test was positive only in few cases. Similar results observed in other Indian studies, probably due to the darker complexion of the study patients here [14-15] However, it was more frequently seen in children with severe illness. Similarly, flushing was also seen more commonly in children with severe disease. These features can be used as an early marker to identify such children. More than a third of the children in our study reported itching during the recovery period. Some of them also had an erythematous rash which was different from the rashes noticed during the initial part of the illness. This rash was not blanchable, more confluent with islets of healthy skin which has been described as "white islands in a sea of red" [16-17].

Dengue causes cerebral hypo perfusion due to shock, and there may also been encephalitis/encephalopathy, hepatic dysfunction, metabolic derangements or acute disseminated encephalomyelitis which may lead to the neurological manifestations. Rarely, Guillain-Barré Syndrome GBS) may also be a manifestation following dengue fever [18]. Ultrasonography was helpful in the present study to detect ascites and pleural effusion in 21 and 3 patients, respectively. Ultrasonography has already been reported to have the highest sensitivity in detecting plasma leakage in dengue [19].

All the patients were managed with careful monitoring of blood pressure, haematocrit, platelet counts on as and when required basis. Antipyretics (paracetamol) were used along with intravenous fluids (normal saline and ringer lactate) on as required basis. Whole blood transfusions were used in four patients when platelets were below 20,000/cumm and patients had evidence of bleed. Platelet transfusions were not used in any of the patients. Total mortality was 0.77% (04/515). All patients who expired have had evidence of preceding dengue infection (IgG positive or history-wise) in the preceding 2-3 months. Overzealous fluid administration (4-6 L) was documented in one of these patient which resulted in fluid overload. Dengue shock syndrome was seen in two patients as cause of death. Platelet count in all patients who expired was above 43,000/cumm.

Although the Dengue is only one disease, this does not usually occur in the same way for different ages. This could be due to the previous exposition of the patient to any serotype of virus Dengue, where the amplification phenomenon carries out that teenager have more symptomatic expressions, added to the difficult for showing this illness on kids. For achieving solid conclusions, each case should be analyzed in a framework where social and epidemiologic factors are considered.

Conclusion

Increase in the number of dengue cases over the past few years has been attributed to rapid unplanned urbanization with unchecked construction activities and poor sanitation facilities contributing fertile breeding areas for mosquitoes. Dengue is taking epidemic form in India. It is one of the common acute febrile illnesses seen in India like enteric fever, malaria, leptospirosis, and viral hepatitis. Symptoms like fever, vomiting, headache and musculoskeletal pain, haemorrhagic tendencies, hepatomegaly, macular rash, pleural effusion and ascites are commonly the presenting features of dengue fever. Laboratory findings may reveal hemo concentration, elevated liver enzymes and thrombocytopenia. Early diagnosis, monitoring and prompt supportive management can reduce mortality in dengue.

References

1. https://www.aiims.edu/aiims/dengue-2007/Dengue%20English-colour.pdf
2. https://www.apollohospitals.com/patient-care/health-and-lifestyle/our-doctors-talk/dengue-fever-in-children
3. WHO (2009), pp. 25–27
4. Gould EA, Solomon T. Pathogenic flaviviruses. Lancet. 2008; 371(9611):500-9. doi:10.1016/ S0140-6736 (08)60238-X. PMID 18262042.
5. Ranjit S, Kissoon N. Dengue hemorrhagic fever and shock syndromes. Pediatric Critical Care Medicine. 2011; 12(1):90-100.
6. Simmons CP, Farrar JJ, Nguyen VV, Wills B. Dengue. The New England Journal of Medicine. 2012; 366(15):1423-32.
7. Ahmed S, Arif F, Yahya Y, Rehman A, Abbas K, Ashraf S, *et al*. Dengue fever outbreak in Karachi 2006: a study of profile and outcome of children under 15 years of age. J Pakistan Med Assoc. 2008; 58(1):4-8.
8. Suleman M, Faryal R, Aamir U, *et al*. Dengue outbreak in Swand Mansehra, Pakistan An epidemiological and diagnostic perspective. Asian Pac J Trop Med. 2016; 9(4):380-384.
9. Reyes-García SZ, Zambrano LI, Sierra M. Clinical and hematological characterization of pediatric patients with

Dengue in Honduras. Rev Méd Risaralda. 2014; 20(2):95-100.
10. Pothapregada S, Kamalakannan B, Thulasingham M, Sampath S. Clinically Profiling Pediatric Patients with Dengue. J Glob Infect Dis. 2016; 8(3):115-20. doi: 10.4103/0974-777X.188596.
11. Sharma NL, Balasubramanyam V, Kandati J, Ponugoti M. Clinical and laboratory profile of dengue fever in children during an outbreak - one year study at tertiary care hospital, Chennai, Tamilnadu, India. Int J Contemp Pediatr. 2017; 4:110-5.doi: 10.4103/ijmr.IJMR_1325_16.
12. Ramabhatta S, Palaniappan S, Hanumantharayappa N, Begum SV. The Clinical and Serological Profile of Pediatric Dengue. Indian J Pediatr. 2017; 84(12):897-901.doi:10.1007/s12098-017-2423-0. Epub 2017 Sep 8.
13. Aggarwal A, Chandra J, Aneja S, Patwari AK, Dutta AK. An epidemic of dengue hemorrhagic fever and dengue shock syndrome in children in Delhi.Indian Pediatr. 1998; 35(8):727-32.
14. Mishra S, Ramanathan R, Agarwal SK. Clinical profile of dengue fever in children: a study from Southern Odisha, India. Scientifica. 2016. doi: 10.1155/ 2016/6391594. [PubMed]
15. Kalayanarooj S, Vaughn DW, Nimmannitya S, Green S, Suntayakorn S, Kunentrasai N, *et al*. Early clinical and laboratory indicators of acute dengue illness. J Infect Dis. 1997; 176(2):313-21.
16. ABM Shahidul Alam, Anwar Sadat S, Zakaria Swapan, *et al*. Clinical Profile of Dengue Fever in Children Bangladesh J child health. 2009; 33(2):55-8. doi: 10.3329/ bjch.v33i2.5678.
17. Vijayalakshmi AM, Jayavardhana A. Febrile rash and convalescent rash of dengue fever. Indian Pediatr. 2013; 50(7):717.
18. Murthy JM. Neurological complications of dengue infection. Neurology India. 2010; 54:581-584.
19. Balasubramanian S, Janakiraman L, Shivkumar S, *et al*. A reappraisal of the criteria to diagnose plasma leakage in dengue haemorrhagic fever. India Pediatr. 2006; 43:334-339.