Section: Medicine

Original Article

Trends in Clinical Profile of Dengue Fever at a Tertiary Care Hospital, Jaipur, Rajasthan

Dilip Kumar Sharma[1], Ashish Bijaykrishna Banerjee[2], Durga Dan Deol[3], Swapnil Jain[4]

[1]Associate Professor General Medicine, JNUIMSRC, Jaipur, India.
[2]Assistant Professor cum Epidemiologist, Community Medicine, JNUIMSRC, Jaipur, India.
[3]Professor and Head Of Department, General Medicine, JNUIMSRC, Jaipur, India.
[4]Assistant Professor, General Medicine, JNUIMSRC, Jaipur, India.

ABSTRACT

Background: Dengue is emerging as the most common monsoon related illness in India, particularly over the last few years. Objective: To study the clinical profile of confirmed dengue cases admitted at a tertiary care hospital and to identify the seasonal variation of the disease. This would help in effective control of dengue in the city. **Methods:** 765 patients who fulfilled World Health Organization (WHO) criteria and admitted in the medical indoor wards for dengue fever from January 2018 to December 2018 were selected for study. All data were entered in the Microsoft Excel worksheet and descriptive statistics were analyzed. **Results:** The maximum number of patients belonged to the age group 21-30 years (29.28%). It was found that more cases of Dengue occur in and around monsoon period with peak in October. The most common presentation apart from fever and bodyache were gastrointestinal symptoms. Total 103 (13.46%) patients had complications. Investigations revealed most of the complications occurred when platelet count went below 20,000 cells/mm 3. **Conclusion:** As most cases were reported during around monsoon period, continued and coordinated efforts should be made to control the transmitting vectors to prevent dengue outbreaks.

Keywords: Dengue, Rajasthan, monsoon.

INTRODUCTION

Dengue is a mosquito-borne viral infection. The infection causes flu-like illness, and occasionally develops into a potentially lethal complication called severe dengue. The global incidence of dengue has grown dramatically in recent decades. About half of the world's population is now at risk. The actual numbers of dengue cases are underreported and many cases are misclassified. One recent estimate indicates 390 million dengue infections per year (95% credible interval 284–528 million), of which 96 million (67–136 million) manifest clinically (with any severity of disease).[1,2] Another study, of the prevalence of dengue, estimates that 3.9 billion people, in 128 countries, are at risk of infection with dengue viruses.[3] Dengue is found in tropical and sub-tropical climates worldwide, mostly in urban and semi-urban areas. The disease is now endemic in more than 100 countries in the WHO regions.[1] Dengue is endemic in India. Transmission occurs year-round in southern areas and from April through November in northern states.[4] The total number of dengue cases has significantly increased in India since 2001.[5] In 2015, Delhi, India, recorded its worst outbreak since 2006 with over 15 000 cases.1Rajasthan has joined the club of six states that have reported more than 3,000 dengue cases in 2018 so far. Most of the cases of dengue are being reported from Jaipur.[6] There is lack of local data with respect to trends in clinical profile of dengue fever in Rajasthan. This study is therefore being conducted to emphasize the need for lot work to be done in this field.

Aims & Objectives

a) To assess the demographic characteristics of the cases
b) To study clinical profile of dengue cases
c) To identify the seasonal variation of the disease
d) To suggest recommendation based on study findings particularly to initiate dengue control measures and also to benefit the needy population in the area

MATERIALS AND METHODS

765 adult patients who fulfilled World Health Organization criteria for dengue fever admitted in medicine indoor ward of Jaipur National University Institute for Medical Sciences and Research Centre, Jagatpura, Jaipur were selected for study during one

Name & Address of Corresponding Author
Dr. Ashish Bijaykrishna Banerjee
5/12, AG Colony,
Bajaj Nagar,
Jaipur 302015,
Rajasthan,
India.

year period from January 2018 to December 2018. Only NS1 dengue antigen positive cases were included. Cases with confirmed diagnosis of other febrile illnesses like malaria, enteric fever, urinary tract infection etc, were excluded from the study. Data was collected in a pretested proforma by meeting objectives of the present study. The data becomes representative of the hospital population and can be applied to the whole population. The clinical history, physical findings and laboratory investigations that help in diagnosis of dengue fever were analyzed and recorded. All data was entered in the Microsoft Excel Worksheet and descriptive analysis was done.

RESULTS

Out of total 765 number of patients, 416(54.37%) were male and 349(45.62%) were female. The age of the patients varied from 15 to 73 years mean age being 29 years. The maximum numberof patients belonged to the age group 21-30 years 224 (29.28%) closely followed by 16-20 years 200 (26.14%) [Table 1].

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

Age in years	Male	Female	Total
16-20	109	91	200
21-30	121	103	224
31-40	88	75	163
41-50	59	53	112
51-60	26	20	46
>60	13	7	20

Table 2: Clinical features in patients with dengue fever

Symptoms	Cases (N= 765, n%)	Clinical findings	Cases (N= 765, n%)
Fever	726(94.90%)	Swollen lymph glands	4(0.52%)
Headache	642(83.92%)	Flushed face	3(0.39%)
Abdominal bloating	619 (80.91%)	Gastrointestinal bleeding	21(2.74%)
Bodyache	696(90.98%)	Rash	8(1.04%)
Menorrhagia	22(2.87%)	Splenomegaly	71(9.28%)
Nausea	604(78.95%)	Pleural effusion	115 (15.03%)
Vomiting	459(60.00%)	Ascites	168 (21.96%)
Bleeding from the nose or gums	30(3.92%)	Tachycardia	665(86.92%)
Bruising on the skin	11(1.43%)	Bradycardia	91(11.89%)
Febrile convulsions	1(0.13%)		
Blood in urine	22(2.87)		

Of the total 765 patients with DF the preexisting morbidities recorded were 157 (20.52%) with hypertension, 93 (12.15%) with type 2 diabetes mellitus, 49 (6.40%) with COPD/asthma, 5 (0.65%)

with rheumatoid arthritis, 16 (2.09%) with obesity and overweight and 18 (2.35%) with thyroid disease. Commonest symptom and sign observed were fever in 726 (94.90%) of the patients and pleural effusion in 581(75.94%). More than 50% of the patients presented with the symptoms of fever, headache, abdominal bloating, joint and muscle pains and nausea. Whereas menorrhagia, bleeding from the nose or gums, bruising on the skin and febrile convulsions were symptoms in less than <20% of the patients. Signs of pleural effusion, ascites and tachycardia were observed in more than > 50% of the patients and swollen lymph nodes, bradycardia, flushed face, gastrointestinal bleeding, rash and splenomegaly were observed in less than 15% of patients [Table 2].

Out of total of the 765 patients with DF, 103 (13.46%) required the ICU treatment; 80 (10.45%) had hypotension, 20 (2.61%) had multiple organ failure, 12 (1.56%) had acute kidney injury. [Table 3].

The median stay in ICU for the 103 patients was 4 days which ranged from 2 to 21days. Out of 765 patients, 756 patients were discharged home after clinical cure, 9 patients who were critically ill opted for referral to other center.

Table 3: Complications observed among the dengue patients

Complications	Cases – (N= 765 N %)
Total ICU admissions	Cases – 103 (13.46%)
Hypotension	80(10.45%)
Multi organ failure	20(2.61%)
Acute kidney injury	12(1.56%)
Hepatitis	10(1.30%)
Metabolic acidosis	1(0.13%)
Respiratory failure	8(1.04%)
CNS bleed	1(0.13%)
Myocarditis with LV failure	1(0.13%)

About 736(96.20 %) of the patients had thrombocytopenia (platelet count < 1.5 lakhs), followed by raised AST in 344(44.96%) and ALT in 39(5.09%), leucopenia in 701(91.63%). [Table 4]

**Table 4: Laboratory findings in patients with dengue fever**

Total WBC – normal count	77(10.06%)
Leucopenia	701(91.63%)
Decreasing neutrophils	92(12.02%)
Platelets –normal count	29(3.79%)
Mild thrombocytopenia less than 150 000 cells/mm3	245(32.02%)
Moderate thrombocytopenia less than 50 000 cells/mm3	382(49.93%)
Severe thrombocytopenia below 20,000 cells/mm3	138(18.03%)
Haematocrit rise (<10%)	462(60.39%)
Haematocrit rise (> 10%)	303(39.60%)
Liver enzymes	
Aspartate amino transferase (AST) levels elevated	344(44.96%)
Alanine amino transferase (ALT) level elevated	39(5.09%)
Unconjugated bilirubin elevated	23(3.00%)

The ultrasonographic findings show that ascites (66.92%) was commonest findings followed by gall bladder pathology (54.64%), hepatomegaly (52.02%) and pleural effusion (47.97%). [Table 5]

Table 5: Radiological findings of dengue patients

Ascites	512 (66.92%)
Gall bladder wall edema	418 (54.64%)
Hepatomegaly	398 (52.02%)
Pleural effusion	367 (47.97%)

Number of cases on rising trend from June onward with peak in October during this study period. [Figure 1]
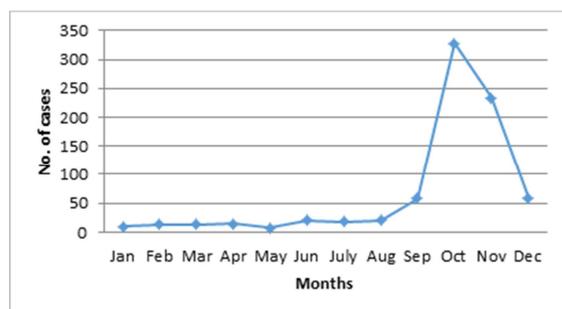
Figure 1: Trend of dengue fever for the study period (n=765)

DISCUSSION

Dengue is the most rapidly spreading mosquito-borne viral disease in the world. In the last 50 years, incidence has increased 30-fold with increasing geographic expansion to new countries and, in the present decade, from urban to rural settings. 7Dengue virus is transmitted by female mosquitoes mainly of the species Aedesaegypti and, to a lesser extent, Ae. albopictus. This mosquito also transmits chikungunya, yellow fever and Zika infection. Dengue is widespread throughout the tropics, with local variations in risk influenced by rainfall, temperature and unplanned rapid urbanization.[1] Since the mid-1990s, epidemics of dengue in India have become more frequent, especially in urban zones.[5] In the present study males were found to be more affected than females. Earlier studies have also shown similar findings. This male predominance may be due to their involvement in outdoor works compared to females as they have the more chances of exposing infected mosquitoes.[7-10] The proportion of dengue cases for age group 21-30 years was highest &was closely followed by age group of 16-20yrs. Similar results were also noted in one study by Chatterjee N et.al.[8] However, a few other studies have depicted differences in age distribution.[11,12] The data on month-wise distribution of dengue cases reveals that the maximum number of cases falls between Juneand Decemberwith a peak in October. This was in accordance with various other studies. This confirmsactive viral transmission during monsoon and post-monsoon period.[7,8-17] The maximum number of dengue cases seen in the month of October indicates an active viral transmission during monsoon and post-monsoon period.[12,18,19] The stagnant water sources following heavy rainfall favors breeding of the mosquito vector resulting in an increased post-monsoon incidence of dengue, thereby maintaining the vector population throughout the year. These findings indicate that preventive measures against dengue infection should come into full swing after the initial bouts of rainfall. In order to curb the increasing number of dengue cases, community awareness, early diagnosis and management and vector control measures need to be strengthened during peri-monsoon period.[11,13] In our study fever, headache, abdominal bloating, bodyache, nausea, vomiting observed is in concordance with many other studies.[9,20–24] In our study, 13.46% dengue cases had pre-existing chronic medical disease like diabetes, hypertension, COPD. Study finding were more or less similar to study done by Tejaswi CN et. al.[9] Complications were observed in 103 cases. It which varied from CNS bleed to hypotension to multiorgan failure which was similar to many other studies.[9,20] In our study, majority of patients (49.2%) had moderate thrombocytopenia on admission. Most of the bleeding manifestation such as rash, gastrointestional bleeding, epistaxis, and menorrhagia were observed with platelet count below 20,000 cells/mm3. This was similar to other study done by Jahnavi K et.al.[25] Dengue infection is known to affect the liver.[26,27] Dengue virus targets the hepatocytes and the kupffer cells in the liver of raised unconjugated bilirubin in 3% of patients were more or less similar to study done by Narasimhan D.[26] Abdominal and thoracic ultrasonography findings in patients with dengue fever wassimilar to other studies.[29,30]

CONCLUSION

To conclude DF is an important public health problem in tropical countries like India and it can present with varied acute clinical manifestations. A high index of suspicion is required to detect and timely manage the DF. The results of this study describe the acute clinical manifestations and role of laboratory investigations in DF patients. Proper confirmation of diagnosis, early institution of therapy, public awareness, and vector control are important factors to be taken into consideration in the prevention and management of dengue.

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