Original Research Article

Clinical profile and mortality indicators of dengue fever

Dileep Babasaheb Kadam[1], Nagnath Kerba Redewad[2*], Ajay S Chandanwale[3]

{[1]Professor and HOD, [2]Assistant Professor, Department of Medicine} [3]Dean, B.J.G.M.C and Sassoon General Hospital, Pune, Maharashtra.
Email: nagnath.redewad09@gmail.com

Abstract

Background: Dengue fever is an vector born diseases, caused by arbo-virus. it has four sero-types namely, DEN-1, DEN-2, DEN-3 and DEN-4. **Materials and Methods:** 318 patients of dengue NS1 and IgM positive are included in the observational study and analyzed over period of April 2014 to December 2014 **Results:** Most common clinical feature was fever (100%) followed by Bodyache and joint pain (81.76%) and headache (48.74%), Retro-orbitalpain(21.38%). Atypical manifestations were pain in abdomen (50%), vomiting (61.63%), Loose motions (8.49%), Peri GB Collection(13.20) and bleeding manifestation like Malena (13.83%) and Hematuria (11.94%) Epistaxis (5.66%), Gum bleed (4.71%). 72 patients had rash and rash associated itching was present in 30.Transaminitis (60.37%) was documented in the form of increase in SGOT more than SGPT. Serositis were observed in form free fluid in abdomen (38.99), Plural Effusion (7.2). Total leuococyte count was normal in 88.67%, but 8.8% patients had leucopenia and 2.5 % with leukocytosis. Out of 64 patients with cardiac involvement 54 had bradycardia, 7 had carditis and 3 patient had anginal pain with ST-T wave changes with positive cardiac biomarkers. 72 patients had dengue shock syndrome out of which 7 patients died with multiorgan dysfunction. Mortality 9 was more common in patients with platelet count <50000 on day one, in patients with serositis, high hematocrit, low systolic blood pressure, deranged renal function and hepatitis. **Conclusion:** One should aware of atypical presentations of dengue fever for timely diagnosis and intervation with the Indicators mortality

Key Words: Dengue fever; Transaminitis.

***Address for Correspondence:**
Dr. Nagnath Kerba Redewad, Assistant Professor, Department of Medicine B.J.G.M.C and Sassoon General Hospital, Pune, Maharashtra, INDIA.
Email: nagnath.redewad09@gmail.com
Received Date: 11/04/2018 Revised Date: 19/05/2018 Accepted Date: 02/06/2018
DOI: https://doi.org/10.26611/1021635

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 12 June 2018

INTRODUCTION

Dengue fever is a self limiting acute mosquito transmitted disease characterized by fever, Headache, muscle, joint pains, rash, nausea and vomiting. Dengue Fever (DF) is caused by an arbovirus and spread by Aedesaegypti mosquitoes. Dengue virus belongs to genus Flavivirus and has four sero-types namely, DEN-1, DEN-2, DEN-3 and DEN-4[1]. The first evidence of occurrence of DF in the country was reported during 1956 from Vellore district in Tamil Nadu. The first DHF outbreak occurred in Calcutta (West Bengal) in 1963 with 30%of cases showing haemorrhagic manifestations. Infection with one sero-type gives lifelong Immunity to same sero-type and temporary immunity to other sero-types[1]. Infection with multiple sero-types and secondary infections manifest severely than primary infections[2]. With growing opulation, rapid urbanization and lack of appropriate sanitary measures, proliferation of mosquitoes and subsequent dengue infections have increased rampantly with an estimated 30-fold increase in incidence over last five decades[1]. Dengue fever can manifest as milder undifferentiated fever or much severe disease like dengue hemorrhagic fever and dengue shock syndrome[1]. Mortality in untreated cases is as high as 20% against 1% in treated cases[1]. With rising disease burden atypical manifestations have increased which are often missed due to lack of awareness. Aim of the study was to analyze for the Clinical and laboratory manifestations of dengue fever.

MATERIALS AND METHODS

It is a Retrospective hospital based observational study conducted at Byramjee Jeejeebhoy Government Medical

How to cite this article: Dileep Babasaheb Kadam, Nagnath Kerba Redewad, Ajay S Chandanwale. Clinical profile and mortality indicators of dengue fever. *MedPulse International Journal of Medicine.* June 2018; 6(3): 120-123. https://www.medpulse.in/Medicine/

College in Pune, India, over a period of April 2014 to December 2014

Inclusion Criteria: Dengue fever patient with NS1 antigen and IgM positive cases aged12 years and above satisfying WHO criteria

Exclusion Criteria: Fever patient with Dengue IgG positive, Clinically dengue patient with negative seromarkers, patient with malaria, enteric fever and leptospirosis A detailed clinical history, physical examination and baseline investigations were noted and Outcome in the form of discharge and death were recorded

Ethical Considerations: Institutional Ethical Committee approval for the study and informed consent from the patients had been obtained.

RESULTS

In this study, total 318 dengue NS1 and IGM positive patients were included and analyzed.

Table 1: Age and gender wise distribution of Dengue patients

Age	Number 318	(M/F)	Total Percentage
12-20	94	69/25	29.55
21-30	125	87/38	39.30
31-40	54	33/21	16.98
41-50	26	17/9	12.89
5160	12	7/5	3.77
61-70	7	3/4	2.2

Table 1 depicts age and gender wise distribution of study subjects, most of patients were in age group of 21 to 30 years comprising of 39.30% followed by 12 to 20 years and 31 to 40 years. Males were more affected than Female.

Table 2: The different clinical features of patients

Symptoms and Sign	Number (%)
Fever	318(100)
Fever With Chills	298(93.71)
Headach	155(48.74)
Bodyach And Joint Pain	260(81.76)
Retro Orbital Pain	68(21.38)
Nose Bleed(Epitaxis)	18(5.66)
Hematuria	38(11.94)
Subconjuctival Bleed	4(1.25)
Melena	44(13.83)
Loose Motion	27(8.49)
Vomiting	196(61.63)
Dyspnoea	19(5.97)
Rash	72(22.64)
Itching	30(9.43)
Pain In Abdomen	159(50)
Disorientation	9(2.83)
Gum bleed	15(4.71)
Patechie	5(1.57)
Pv bleed	6(1.88)

It was noted from table 2 that fever was present in all patients out of which (298) associated with chills. Other symptoms of dengue were common with typical dengue infection such as Bodyach, Joint Pain (260), headach (155), retro-orbital pain(68). GI symptoms were present in the form of Vomiting in 196 patients, pain in abdomen and loose motions in 159 and 27 patients respectively. Bleeding from different sites of the body was evident in 130 patients (40.88%).Among these 130 patients of bleeding manifestations,44 patients had gastrointestinal bleeding in the form of malena, 38 patients had hematurea,18 with epistaxis, 15 with gum bleeding and few patients presented as bleeding per vaginal (6) patechie (5)and 4 patients had Subconjunctival Bleed. 72 patients had mor belliform rash with appear on 3 or 4 day. 9 patients had respiratory symptoms in the form of dyspnoea secondary to pneumonia or effusion and disorientation documented in 9 patients.

Table 3: Out come with Laboratory Investigation

Signs And Investigation	Number 318	Death
Hb<10	21	4
Icterus, Total Bilirubin>1	15	8
RR>20	12	3
BP <90/60	72	7
Plural Effusion	23	1
Free Fluid	124	9
Peri GB Collection	42	6
SGPT	173	6
SGOT	192	6
Wbcs>12000	8	3
Ns1	199	5
IgM	155	4
Wbcs<4000	28	2
Creatinine >1.5	40	6

As shown in table 3, Hb was less than 10 in 21 patient out of which four patients died. Liver function test were deranged in the form of raised bilirubin in 15 patients and mortality was 8. Serum glutamic oxaloacetic transaminase was incresed more than normal in 192 patients as compare to serum glutamic-pyruvic transaminase in 173 patients. Total leukocyte count was decreased in[28] patients as compared to increased in total leukocyte count noted in[8] patients. Sign of serositis such as free fluid in abdomen was present in 124 patients, peri Gall bladder collection in 42 patients followed by plural effusion in 23. Hypotension was observed in 72 patients out of which 7 patients succumbed. NS1 positive patients (199) were more in number than IGM positive patients[155] with mortality 5 and 4 respectively. Hypotension with serositis, transaminitis along with raised bilirubin and renal dysfunctions were the leading cause of death.

Table 4: Platelet count on day one and outcome

Symptoms	Male (216)	Female(102)	Total (318)	Death
≤10000	11	7	18	2
11000 - 20000	48	17	65	3
21000 - 30000	38	15	53	0
31000 -40000	25	10	35	1
41000 -50000	17	7	24	3
51000 - 60000	13	9	22	0
61000 - 70000	15	4	19	0
71000 - 80000	14	4	18	0
81000 -90000	4	2	6	0
91000 -100000	6	5	11	0
≥100000	25	22	47	0

From table 4 it was observed that, mortality was more in patients with platelet count below 50000.

Table 5: Platelet transfusion and outcome

Platelet count on day one	Number(318)	No of pt transfused	Outcome(death)
≤10000	18	12	1
11000-20000	65	20	3
21000-30000	53	11	0
31000-40000	35	8	0
41000-50000	24	6	2
51000-60000	22	4	0
61000-70000	19	1	0
71000-80000	18	1	0
81000-90000	6	0	0
91000-100000	11	0	0
≥100000	47	0	0

Table 5: 123 patient had platelet count above 51000 of which only 6 patients were transfused with platelet without any mortality. Indication for platelet transfusion were hematemesis, melena, epistaxis and hematuria.

Table 6: Complications and Death

Complication	No of patients (318)	Death (9)
Carditis	7	2
ARDS	4	2
Hepatitis	15	8
Tachycardia	3	1
Sr creatinine>1.5	40	6
Plural effusion	23	1
Free fluid in abdomen	124	9
Shock	72	7

Table 8 shows complication observed in our study. Serositis were the most common complication in the form of free fluid in abdomen which was present in 124 patients, plural effusion in 23 and mortality was very high in serositis group of patients. Shock was second most common complication observed in 72 patients out of which 7 patients died. Cardiac complication were carditis in 7and tachycardia in 3 patients. Mortality was noted in patients with carditis 2 out of 7 and one death in patient with tachycardia[3]. Two patient died of acute respiratory distress syndrome out of 4. Renal dysfunction was observed in 40 patients with mortality of 6. Case fatality was high in patients with hepatitis, 8 patients died out of 15.

Table 7: Clinical profiles of the expired patients

Total Number (Males/Females)	9 (5/4)
Mean hematocrit	45.66%
Mean platelet count	28222/mm3
Mean systolic blood pressure	80 mm Hg
Serum creatinine	2.63mg/dl
Sr SGOT	198.33IU/L
Total Bilirubin	**3.03mg/dl**

The clinical parameters of the expired patients are shown in Table 7. Of the 318 cases analyzed mortality was 9. The remaining patients recovered using supportive therapy with crystalloid, colloid, blood transfusion or platelet transfusions. Of the 9 deaths, 5 were males and 4females. Mean hematocr it was 45.66%, mean platelet count was 28222/mm3, mean systolic blood pressure was 80mmHg, serum creatinine was 2.63 mg/dl and liver dysfunction in form of increase in serum SGOT 198.33IU/L and total bilirubin 3.03mg/dl. No statistical analysis of the clinical profiles of the expired patients was possible due to the small number[9] of patients with mortality.

DISCUSSION

Of all the arthropod-borne viral diseases, dengue fever is the most common. It is endemicin more than 100 countries and 40% the world's population is at risk for this disease[3] All 4 types of dengue viruses have been isolated from the affected Indian population. The present study comprised of 318 cases of dengue fever. Most of the patients in the present study were young adults (mean age = 28±11yrs). Male affected more than female[4]. Asimilar trend was in Delhi (Anuradha, Singh, Rizvi, *et al*)[5] and in Singapore (Goh,1995; Chan *et al*)[6]. Fever was present in all the cases. The other presenting complaints were myalgia and arthralgias (81.76%), vomiting (61.63%), pain in abdomen (50%), headache (48.74%), diarrhea (8.49%) and dysapnoea (5.97%) Trend of symptoms has changed in form of increased incidence of gastro intestinal manifestation as compared to previous study by Sinha N *et al*[7] and Karoli R *et al*.[4] Haemorrhagic manifestations were present in (40.88%) patients in which malena (13.83%) was the most common symptom followed by hematuria (11.94%). Other bleeding manifestations were epistaxis (5.6%), gum bleeding (4.7%), sub- conjunctival bleed and menorrhagia. Sinha N *et al*[7] observed 36.23% of Haemorrhagic manifestations of which gum bleed and epistaxis were most common presentation. Rash was found in 22.64% of cases. This percentage is lower than that previously

reported (36.7%) in a DF outbreak in Delhi in 1996 (Sharma *et al*, 1998)[8] and in Vishakhapatnam (Krishnamurthy *et al*, 1965)[9] but similar with 2003outbreak of dengue in Delhi. (NP Singh *et al* 2005)[7]. Liver enzyme elevation, a common feature in dengue infection[10,11] was also apparent in our study. In our study, AST levels were greater than those of ALT levels in all of dengue infected patients, a finding that has also been reported earlier[12]. 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. Fulminante hepatic failure occurs because of acute severe hepatitis and massive necrosis of the liver, causing hepatic encephalopathy and even death. In our study serositis was present in 147 (46.22) of cases in the form of ascites (38.33) and plural effusion (7%) while karoli *et al* 2012[4] observed it in 30% patients. Estimation of WBC count revealed leucopenia (WBC <4,000 cells mm3) in 8.8% of cases. The average WBC count was 1650. NP Singh, *et al* 2005[7] in his study observed leucopenia (<3000 cells mm3) in 68% of patients which is higher than our study. Dengue specific IgM antibody and NS1 antigen were positive in 62.57% and 48.74% respectively. Low platelet count on day one associated with more number of death than patient with platelet count more than 50,000 and transfusion of platelet was not have any effect on outcome of patient in form of mortality. Renal involvement was 5.4% in a study by NP Singh, *et al* 2005[7] while in our study we observed renal dysfunction in 12.57% cases. Hypotension was present in 72 cases of which 7 patient expired. Mean hematocrit 45.66%, Mean platelet of 28,222 /mm3, Mean systolic BP of 80mmHg,Deranged Renal function test 2.63mg/dl and hepatitis with raised bilirubin and SGOT can be considered as mortality indicator.

Nine died out of the 318 patients. These patients had hypotension and signs of plasma leak. They also had renal dysfunction and hepatitis. Most common cause of mortality in our study was multi organ dysfunction.

CONCLUSION

It was observed from study that clinical feature of dengue was changed from typical manifestations to atypical manifestations as increase in number of patients with blanching rash, abdominal symptoms, hematuria and melena. While the high hematocrit, low systolic blood pressure, deranged renal function test, hepatitis were the mortality indicator.

REFERENCES

1. World Health Organization, Regional Office for South-East Asia. Comprehensive Guidelines for Prevention and Control of Dengue and Dengue Haemorrhagic Fever. Revised and expanded edition. WHO-SEARO 2011.
2. Vaughn DW, Green S, Kalayanarooj S, Innis BL, Nimmannitya S, Suntayakorn S, et al. Dengue viremia titer, antibody response pattern, and virus sero-type correlate with disease severity. J Infect Dis. 2000; 181:2–9.
3. 3K Park, the Dengue Syndrome. Park's textbook of preventive and social medicine 2000; 16: 186-188
4. Karoli, Ritu, et al. "Clinical profile of dengue infection at a teaching hospital in North India." The Journal of Infection in Developing Countries 6.07 (2011): 551-554.
5. Anuradha S, Singh NP, Rizvi SNA, Agarwal SK, GurR,Mathur MD. The 1996 outbreak of dengue hemorrhagic fever in Delhi, India. Southeast Asian J Trop Med Public Health 1998; 29: 503-6.
6. Goh KT. Changing epidemiology of dengue in Singapore (letter). Lancet 1995; 346: 1098.
7. Singh NP, Jhamb R, Agarwal SK, Gaiha M, Dewan R, Daga MK, et al. The 2003 outbreak of Dengue fever in Delhi, India. Southeast Asian J Trop Med Public Health 2005; 36: 1174-78.
8. Sharma S, Sharma SK, Mohan 1998; A et al. Clinical profile of dengue hemorrhagic fever in adults during 1996 – Outbreak in Delhi, India. Dengue Bull 1998; 22: 20-7.
9. Krishnamurthy K, Kasturi TE, Chittipantulu G. Clinical and pathological studies of a outbreak of dengue- like illness in Vishakapatnam. Indian J Med Res 1965; 53: 800-12.
10. Parkash O, Almas A, JafriWasmin SM, Hamid S, Akhtar J, Alishah H (2010) Severity of acute hepatitis and its outcome in patients with dengue fever in a tertiary care hospital Karachi, Pakistan (South Asia). BMC Gastroenterology 10: 43.
11. Itha S, Kashyap R Krishnani N, Saraswat VA, Choudhri G, Aggarwal R (2005) Profile of liver involvement in dengue virus infection. Natl Med J India 18: 127-130.
12. De Souza LJ, GoncalvesCarneiro H, SoutoFilho JT, Ferreira de Souza T, Azevedo Cortes V, Neto CG, Bastos Assed D, Wallace da Silva Siqueira E (2002) Hepatitis in dengue shock syndrome. Braz J Infect Dis 6: 322-327.
13. Mohapatra MK, Patra P, Agrawala R. Manifestation and outcome of concurrent malaria and dengue infection.2012
14. Gulati, Sameer, and AnuMaheshwari. "Atypical manifestations of dengue." Tropical Medicine and International Health 12.9 (2007): 1087-1095.

Source of Support: None Declared
Conflict of Interest: None Declared