Clinico-Haematological Profile and Outcome of Dengue Fever Cases Admitted In 2014 at Tertiary Care Hospital, Rajkot, Gujarat

Jasmin R Oza[1], Bhavesh R Kanabar[2], Umed V Patel[3], Kshama D Gajera[4], Dhara V Thakrar[5], Ashutosh D Jogia[6]

Author's Affiliation:
[1]Assistant Professor, Dept of Community Medicine , GAIMS, Bhuj; [2]Medical Officer, Health Dept, Rajkot Municipal Corporation; [3]Asso Prof; [4]Asst Prof, Dept of Community Medicine, PDU Govt. Medical College, Rajkot; [5]Asst Prof, Dept of Community Medicine, American International Institute of Medical Sciences, Udaipur; [6]District Programme Officer (DPO), NPCDCS, Gir-somnath

Correspondence
Dr. Jasmin R. Oza
Drjasminoza2006@gmail.com

ABSTRACT

Background: Dengue fever (DF) and its severe forms - Dengue haemorrhagic fever (DHF) and Dengue shock syndrome (DSS) have emerged as a notable public health problem in terms of the mortality and morbidity associated with it.

Objective: To study the clinical-haematological profile and outcome of Dengue fever cases.

Methodology: A cross-sectional prospective study was conducted at PDU Government Medical College, Rajkot during 1st January to 31st December, 2014. All confirmed Dengue cases admitted in this institute during 2014 were included in the study. Analysis was done using the Microsoft Office Excel 2007 and appropriate statistical tests were applied.

Results: Among 145 patients, included in this study, 62% patients were males and 69% patients were in the age group 15-44 yrs. Fever was present in all the cases i.e. (100%), followed by myalgia(99%), headache(96%), vomiting(78%) and epistaxis(63%). Majority of the cases presented with classical dengue fever i.e.(90%) followed by DHF(10%). No death due to dengue was reported during study period.

Conclusion: The most common age group for dengue fever was 15-44 yrs. Most of the patients were male. Fever was present in all the cases. No death due to dengue was reported during study period.

Key words: Classical dengue fever, Clinico-haematological profile, Complications, Outcome

INTRODUCTION

Dengue fever is one of the most common arboviral infection in humans.[1] The epidemic trend of dengue, in India, is on the rise in recent years. Dengue viruses (DV) belong to family Flaviviridae and there are four serotypes of the virus referred to as DV-1, DV-2, DV-3 and DV-4. [2] All four serotypes of dengue have been isolated in India. Dengue is a self limiting acute mosquito transmitted disease characterized by fever, headache, muscle, joint pains, rash, nausea and vomiting.[3] These infections may be asymptomatic or may lead to (a) "classical"

Dengue fever (DF), or (b) Dengue Hemorrhagic fever (DHF) without shock, or (c) Dengue hemorrhagic fever (DHF) with shock.[4] DF and its severe forms - DHF and Dengue shock syndrome (DSS) have emerged as a notable public health problem in recent decades in terms of the mortality and morbidity associated with it.[5]

Dengue infections vary in severity, ranging from influenza-like self-limiting illness to life-threatening DHF and DSS which, if left untreated, are associated with mortality as high as 20%.[6] The resurgence of dengue has been observed in India

and dengue outbreaks have been frequently reported from different parts of the country in both urban and rural populations.[7-12]

Dengue and DHF is endemic in more than 100 countries in the WHO regions of Africa, the Americas, Eastern Mediterranean, South-East Asia and Western pacific. South-East Asia is one of the regions with highest risk of DF/DHF, accounting for 52% of the global risk. The case fatality rate in patients with DHF and DSS can be as high as 40%.[13]

During year 2013, about 370 cases were reported with 2 deaths in Rajkot district, 677 cases with 2 deaths in Rajkot Corporation and 1303 cases reported with 8 deaths at PDU Govt. Medical College, Rajkot.[14]

Present study was carried out to know clinico-haematological profile and outcome of Dengue fever cases admitted at PDU Government Medical College, Rajkot during the calendar year 2014.

METHOOLOGY

A cross-sectional prospective study was conducted at PDU Government Medical College, Rajkot during the calendar year 2014. Suspected cases of Dengue were tested and confirmed for Dengue in the department of Microbiology. All confirmed Dengue cases admitted in this institute from 1st Jan, 2014 to 31st Dec, 2014 were included in this study.

Oral consent was obtained from each case before inclusion in the study. In case of children, interview of parents were conducted to collect the data. The exclusion criteria for selection of cases were all those patients who were discharged before dengue test confirmation report. GOI recommends use of ELISA based antigen detection test (NS1) for diagnosing the cases from 1st day onwards and antibody detection test IgM Capture ELISA (MAC ELISA) for diagnosing the cases from 5th day of onset of disease for confirmation of Dengue infection.[15] Necessary approval of the Institutional Ethical Committee (human) was obtained prior to the beginning of the study.

A pre-tested semi-structured questionnaire was used for collection of data. At first the data was collected regarding Dengue confirmed cases from Microbiology Department. Personal interview was conducted to collect information regarding clinico-epidemiological and haematological profile from Dengue fever cases admitted in this institute. All patients were visited daily for clinical condition and for other case details till discharge or death.

Data collected from the patients included demographic data like age, sex, religion, clinical profile of Dengue patients, any coexisting conditions, complications and its outcome etc. The data entry was done in Microsoft Office Excel 2007 and analysis was done using the same software and appropriate statistical tests were applied.

RESULTS

The present study was conducted among 145 confirmed dengue fever cases admitted in PDU Government Medical College, Rajkot during Year 2014.

Table 1 reveals the socio-demographic profile of dengue patients. Total 100 (69%) of 145 cases occurred in the age group 15-44 years. Mean age was 24.31. Among 145 Dengue fever cases, 90 (62.1%) were males while 55 (37.9%) were females. 84.14% cases were Hindu.

Table 2 shows that fever was present in all the cases i.e. (100%), followed by myalgia (99%), headache (96%), vomiting (78%), epistaxis (63%), abdominal pain (19%), hemetemesis (12%), decreased urine frequency (9%) and skin rashes (8%). Among 145 Dengue fever cases, 95 (65.52%) cases reported bleeding from nose and mouth, 16 (11.03%) cases reported hemetemesis, 9 (6.21%) cases reported pleural effusion, 4 (2.76%) reported ascites after admission.

Table 3 revealed that after admission at this institute, on the first day mean Haemoglobin was 10.69gm%. Mean lowest Haemoglobin while in hospital was 9.7gm% and at the time of discharge it was 11.2gm%. The difference of lowest Haemoglobin during admission and at the time of discharge among rural and urban cases was statistically highly significant. After admission at this institute, mean platelet count on 1st day was 88752/cumm, lowest mean platelet count was 68879/cumm and at the time of discharge it was 113869/cumm. The difference of lowest platelet count and platelet count at the time of discharge among rural and urban cases was highly significant.

Table 4 shows that 25 (17.24%) cases had leucopenia (Leucocyte count <4000), 8(5.52%) had leucocytosis and 112 (77.24%) cases had leukocyte count within normal limit. Mean leucocyte count was 5650. Analysis of cases who were investigated for activated partial thromboplastin Time (APTT) showed that 36.55% had raised activated partial thromboplastin Time (APTT).

Table 5 shows that majority of 131 (90%) of 145 cases were presented with dengue fever 14 (10%) of 145 cases were presented with DHF with no case of DSS was reported during the study.

Table 6 shows that 91 (62.76%) of 145 cases improved and were discharged. No death due to Dengue fever was reported.

Table 1: Socio-demographic profile of Dengue patients (N=145)

Variable	Number (%)
Age Group (In Years)	
<5 yrs	8 (5.52)
5-14 yrs	24 (16.55)
15-44 yrs	100 (68.97)
45-60	8 (5.52)
>60	5 (3.45)
Sex	
Male	90 (62.1)
Female	55 (37.9)
Religion	
Hindu	122 (84.14)
Muslim	23 (15.86)

Table 2: Dengue cases according to symptoms and complications (N=145)

Symptoms and complications	Number (%)
Symptoms	
Fever	145 (100)
Myalgia/Arthralgia	143 (98.62)
Headache	139 (95.86)
Vomiting	113 (77.93)
Retro orbital pain	101 (69.66)
Epistaxis	92 (63.45)
Abdominal Pain	28 (19.31)
Decreased urine frequency	13 (8.97)
Skin Rashes	12 (8.28)
Complications	
Bleeding from Nose & Mouth	95 (65.52)
Hemetemesis	16 (11.03)
Pleural Effusion	9 (6.21)
Ascites	4 (2.76)
Melana	2 (1.38)
Neurological Symptoms	2 (1.38)

Table 3: Mean Haemoglobin and Mean Platelet Count at different time (N=145)

Mean count	Mean Hb (gm%)	Mean Platelet Count (cells/mm³)
On First day	10.69(2.23)	88752 (58914.9)
Lowest	9.7(2.06)	68879 (52353.6)
At the time of discharge	11.2(1.43)	113869 (54669.6)

*Hb- Haemoglobin;
t value (lowest Hb vs. Hb on discharge) =14.316, $p<0.01$
t test (lowest Platelet Count vs. Platelet Count on discharge) =15.756, $p<0.01$

Table 4: Laboratory findings in Dengue Fever cases at the time of admission

Laboratory Test	Total
Leukocyte Count (N=145)	
<4000	25 (17.24)
4000 – 10,000	112 (77.24)
>10,000	08 (05.52)
Mean leukocyte count	5,650
APTT (Ref. Range = 25-35 sec.) (N= 58)	
Raised	53 (36.55)
Normal	05 (03.45)
Not done	87 (60.00)

*APTT-Activated partial thromboplastin time

Table 5: Distribution of cases according to type

Type	Cases (n=145) (%)
Classical Dengue Fever	131 (90.34)
DHF (Dengue Hemorrhagic Fever)	14 (09.66)
DSS (Dengue Shock Syndrome)	00 (00.00)

Table 6: Dengue Fever cases according to final outcome (N=145)

Final Outcome	Total (%)
Discharge	91 (62.76)
Discharge on request(DOR)	44 (30.34)
Discharge against medical advice (DAMA)	10 (06.90)
Death	00 (00.00)

DISCUSSION

In this study majority of cases i.e. 69% were in the age group of 15-44 years because majority of cases were involved in indoor space activities. This finding is similar to the study by Saini et al.[16] in Western Maharashtra, India. Similarly, study by Ahmed N et al.[17] in Delhi, North India reported 70% cases in the age group 11 to 40 years. Male patients were more in this study which was similar to the study by Ashwini Kumar et al.[18] in Karnataka and study by Karoli et al.[19] in North India because more Male populations and personal protection were not properly maintained by them. In our study, 84.14% cases were Hindu and 15.86% cases were Muslims in this study while study by Shekde S.D. et al.[20] showed 63.16% cases were Hindu whereas Muslims were 15.26%.

This study shows the commonest symptoms of DF was fever (100%) which was similar to the study by Dr. Mohan D kushinkunti et al.[21] and Ashwini Kumar et al.[18] in Karnataka while headache was the commonest symptoms in the study by Karoli et al.[19] in North India. Most common complication in our study was bleeding from nose and mouth (65%) followed by hemetemesis (11%) and pleural effusion (6%) while petechiae (67%) and ARDS (33%) were mostcommon complication in study by Ashwini Kumar et al.[18]

After admission, on the first day mean Haemoglobin was 10.69gm%. Mean lowest Haemoglobin while in hospital was 9.7gm% and at the time of discharge it was 11.2gm%. Mean platelet count on 1st day after admission was 88752/cumm, lowest mean platelete count was 68879/cumm and at the time of discharge it was 113869/cumm. The reason behind significant difference in haemoglobin and platelet count among cases from rural and urban area was lag period passed by patients of rural area for seeking treatment at tertiary care hospital during which time RBC are already hemolysed and platelets are also decreased.

The present study revealed that 25 (17.24%) cases had leucopenia (Leucocyte count < 4000). However, Ratageri et al.[22] showed only 21% patients suffered from leucopenia and Banerjee et al.[23] demonstrated no evidence of leucopenia in their patients. Our study showed APTT was raised in 53 (36.55%) cases due to thrombocytopenia

Majority i.e. 131(90%) of 145 cases presented with dengue fever, 14(10%) of 145 cases were presented with DHF with no case of DSS was reported during the study. The study by Narayanan et al.[8] in Chennai showed that, out of 59 cases, 43(72.88%) had DF, 11(18.64%) had DHF and 5 (8.47%) DSS cases were also reported.

Overall outcome of patient care was good, with 63% cases improved & discharged from PDU Govt. Medical College, Rajkot while 99.33% cases improved & discharged in a study of Kale AV et al.[24]

CONCLUSSION

Early treatment seeking behaviour of patients can prevent occurrence of severe form of dengue and its complications.

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