ISSN: 0975-3583,0976-2833 VOL13, ISSUE 01, 2022

ORIGINAL RESEARCH

Study of the Clinical Profile with Special Reference to Ophthalmic Manifestations in Dengue Patients in Tertiary Care Centre of Central India

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Abstract

Background: Dengue is a known endemic disease that is usually caused by Aedesaegypti mosquito. It is on rise in various parts of the world in recent decades. It is important to keep reporting clinical profile and analysing them from time to time so as to keep a check on various clinical presentations of Dengue. **Aims & Objectives:** Study of clinical profile of Dengue patients and to study various ophthalmic features associated with it. **Materials and Methods:** It is a retrospective observational study over a period of three months (01/10/2018 to 31/12/2018). 56 cases of dengue patients are reported here with specific clinical features that came to our tertiary care hospital of central India. We also attempted to find various ophthalmic features that can be associated with Dengue. **Results:** In our study we found fever, headache and bodyache as the most predominant clinical symptoms. Thrombocytopenia was the most prevalent laboratory abnormality that was found. Our study analysed various clinical features of Dengue through statistical analyses. However p values were found to be insignificant.**Conclusion:** Every patient with fever and thrombocytopenia must undergo a card test/ELISA (whichever is available) for Dengue for early diagnosis and management and to identify the early warning sign.

Keywords: Dengue, clinical profile, Ophthalmic manifestations**.**

Introduction

Dengue is a viral illness that is transmitted through bite of female mosquitoes, Aedesaegypti. The incidence of dengue as well as mortality, worldwide, has increased in recent decades with Asia comprising about 70% of the global burden of all dengue cases. In India its rise is mainly seen after 2001. There are some unique features about Dengue that characterizes with broad spectrum of clinical presentation. Dengue virus is a positive sense RNA virus of Flaviviridae family. It has 4 serotypes- DENV-1, DENV-2, DENV-3 and DENV-4. Infection from serotype 1 produces lifelong immunity against that particular serotype but if in later life, there occurs cross infection with other serotype (secondary dengue), it can lead to serious complications like- multi-organ dysfunction, capillary leakage, shock, bleeding, etc.[1] Moreover, there are data that suggest genetic changes that occur in arbovirus RNA of dengue virus and result in such broad clinical manifestations.[2] As per the reports from the National Vector Borne Diseases Control Programme (NVBDCP), there were more than 1 lakh cases of dengue in 2016 epidemic with more than 200 deaths. In the same report it was stated that

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 01, 2022

Madhya Pradesh had more than 3000 cases with 12 deaths.[3]There are many literature in past that has focused on the clinical profile of dengue patients and interestingly every literature has produced some unique data that has helped to add our knowledge about dengue.[4,5,6] Ocular manifestations in dengue is an evolving area of research with the prevalence ranging from 7 to 40 %.[5] The exact mechanism is unknown but immune mediated reaction is the most probable explanation that has come up in recent studies.[6] It leads to inflammatory changes, hemorrhagic changes, uveitis etc. in eyes.Barde PV et al., studied that dengue is endemic in India and four DENV serotypes circulate in the patients in isolation or in combination. Dengue remained a neglected disease for long period in Central India.[2].Gupta N et al., stated that public awareness on Dengue virus infection and active participation of the community is essential. They also emphasized on the importance of health education programmes about dengue disease that can increase community knowledge and provoke active participation of the community in various Dengue related vector control programmes.[7]Dash PK et al., describes that dengue poses the greatest arboviral threat to human health. Investigation of a dengue outbreak in Andhra Pradesh, southern India in 2007 by serology, virus isolation, RT–PCR and genotyping revealed emergence of dengue virus type 4 (DENV-4) along with the prevailing DENV-3 and a clear shift in the serotype from DENV-3 to DENV-4 in India.[8] The dengue virus non-structural protein 1(NS1) antigen test is the specific dengue test, widely applied for early diagnosis of dengue with significant sensitivity and specificity.[12] It is also detectable in both primary and secondary dengue infections.[13]Dengue is continuously evolving with more and more clinical features and that has produced huge economic burden on the health care sector. Thus it is important to study every epidemic wave that occurs in every part of the world in great detail so that it can help open new areas of research and new advancements in treatment.So in our research work, we compiled the clinical profile of Dengue patients along with an attempt to study the ophthalmic manifestations associated with it.

Aims & Objectives

Our purpose is to study the clinical profile of patients with special reference to ophthalmic manifestations admitted with Dengue fever in medicine ward.

Materials & Methods

This is a cross sectional observational retrospective study over a period of three months (01/10/2018 to 31/12/2018) in a tertiary care hospital of Central India. Study included56 patients admitted in Medicine ward that were positive for NS1 antigen, IgM&IgG antibodies using rapid card test. All patients whose MRD files were complete with all investigation reports available were included in study. All incomplete files with same diagnosis in same duration were excluded from study. Due permission was taken from institutional authorities to conduct the research work. MS Excel spreadsheets were used to perform statistical calculations pertaining to this study.

Result

Male	%	Female	%
37	66.07	19	33.92

Table 1. Sex distribution of Dengue Patients

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 01, 2022

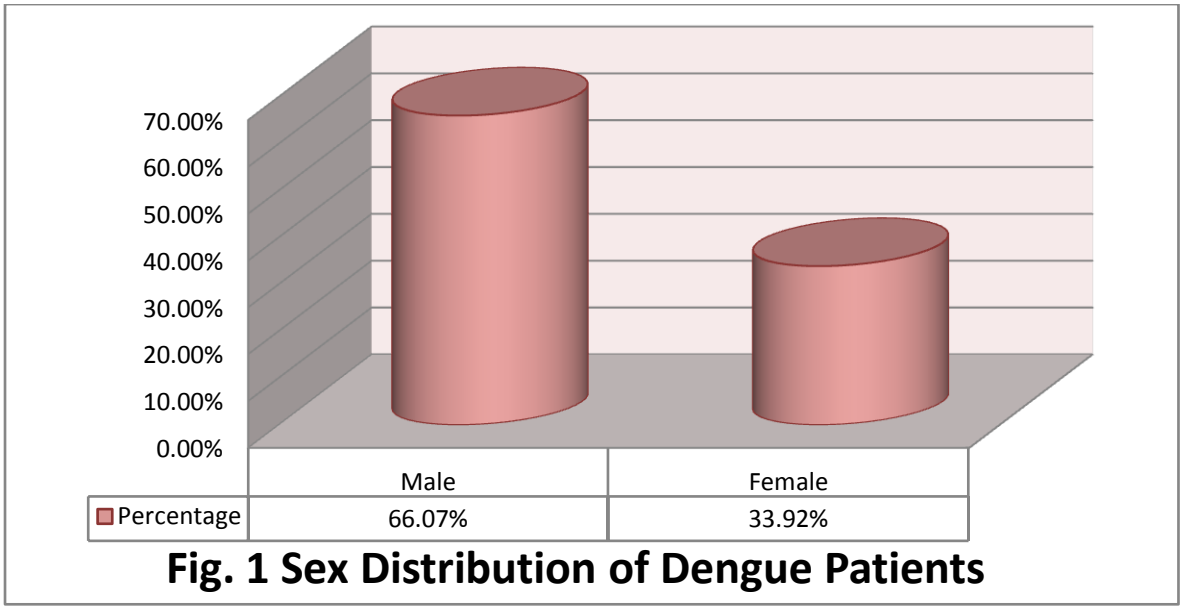

Fig. 1 Sex Distribution of Dengue Patients

Table 2. Clinical Features based Distribution of Dengue Patients

S. No	Clinical Features	Patient Percentage (%)
01	Fever	98.21%
02	Bodyache	57.14%
03	Headache	41.07%
04	Retroobital Pain	00%
05	Arthralgia	00%
06	Anorexia	7.14%
07	Altered Taste	00%
08	Constipation	00%
09	Loose motions	3.57%
10	Abdominal Pain	3.57%
11	Rash	7.14%
12	Cough/Coryza	10.71%
13	Giddiness	1.78%
14	Nausea /Vomiting	21.42%
15	Itching	3.57%
16	Generalized Weakness	30.35%
17	Blurring of vision	5.35%
18	Bleeding Diathesis	3.57%
19	Throat pain	00%
20	Burning micturition	1.78%
21	Narrow Pulse pressure (< or = 20 mmHg)	1.78%
22	Hypotension (systolic blood pressure < or = 90 mmHg)	5.35%
23	Positive Torniquet test	7.14%

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Table 3. Investigations based Distribution of Dengue Patients

S. No	Investigations		%
1	Thrombocytopenia on admission		94.64%
2	Raised Hematocrit (PCV) (>54 in male)		0%
3	Raised Hematocrit (PCV) (> 48 in female)		0%
4	Decreased Hematocrit (PCV) (<40 in Male)		16.2%
5	Decreased Hematocrit (PCV) (<36 in Female)		26.3%
6	LFT	Deranged SGOT/SGPT	23.21%
		Deranged SGOT/ SGPT with Hypoalbuminemia	12.5%
7	KFT – Deranged		3.57%
8	USG abdomen – Edematous Gall Bladder, Splenomegaly, Ascites		10.71%
9	Rapid Card Test		
	NS1 Antigen Positive		91.07%
	IgM		10.71%
	IgG		7.14%
10	Fundus	Hyperemic Disc	3.57%
		Dot Hemorrhages	3.57%

Table 4. 'P' Valuesas Test of Significance for Clinical Features found in Dengue Patients

S. No	Variables/Parameters	'P' Values
01	Fever	1
02	Bodyache	0.37
03	Headache	1
04	Retroobital Pain	1
05	Arthralgia	1
06	Anorexia	1
07	Altered Taste	1
08	Constipation	1
09	Loose motions	1
10	Abdominal Pain	1
11	Rash	1
12	Cough/Coryza	1
13	Giddiness	0.089
14	Nausea /Vomiting	0.25
15	Itching	0.17
16	Generalized Weakness	0.99
17	Blurring of vision	1
18	Bleeding Diathesis	1
19	Throat pain	1
20	Burning micturition	1

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In this study, we have taken 56 Dengue patients (37 males and 19 females). It was found that dengue was more prevalent in male as compare to females. (Table 1). Table 2 shows fever as the most common symptom and was found in 98.2 % patients. This was followed by bodyache (57.14%) > headache (41%) > generalized weakness (30.35%). Amongst ophthalmic manifestations, only blurring of vision was found in 5.35% patients. Less commonly, we also found burning micturition, bleeding diathesis, giddiness, itching, anorexia, loose motions, and abdominal pain. Narrow pulse pressure, hypotension and positive Torniquet test were found in 1.78%, 5.35% and 7.14 % respectively.

As depicted in Table 3, the most common laboratory finding on admission was thrombocytopenia (94.64%). Hematocrit was not found to be raised in any of the patients while decreased hematocrit was found in 16.2% of male patients and 26.3% of female patients. This was followed by deranged liver enzymes (SGOT, SGPT) in 23.21% and deranged liver enzymes along with hypoalbuminemia in 12.5% patients. Kidney function test (KFT) was deranged in 3.57% patients.10.71% patients presented with significant findings in Ultrasonography (USG). Fundus examination revealed hyperaemic disc & dot haemorrhages in 3.57% patients each. Table 4 shows that out of all the clinical features (qualitatively assessed using Fisher Exact's test), statistical significance could not be found in any of the clinical parameters.

Discussion

In this study, we analyzed different clinical features that are known to be associated with Dengue. Our findings show that fever, bodyache, headache were the predominant symptoms while loose motions, itching and bleeding diathesis were less common findings. Anorexia, giddiness, burning micturition and abdominal pain were uncommon findings. In our study on admission thrombocytopenia was present in 94.64% but severe thrombocytopenia of <10000/cu mm was not seen in any patient. Deranged liver function test (LFT) was present in 23.21%. Deranged LFT with hypoalbuminemia was present in 12.5%. Deranged KFT was present in 3.57%. Edematous gallbladder, splenomegaly and ascites present in 10.71%.

Our study findings are in accordance with the studies by Rachel Daniel et al. who studied dengue fever in Kollam city of Kerala in 2003 in which 250 IgM dengue antibody-confirmed cases admitted to three majorhospitals in Kollam city. In that study, the predominant findings were: fever (96.8%), headache (77.2%), abdominalpain (62.4%), diarrhoea (15.2%), bleeding (15.2%), skin rash (13.2%), pruritus (10.4%), sore throat (5.2%), and seizures (0.8%). The major physical findings noted included positive tourniquet test (33.67%), hepatomegaly (17.6%), bradycardia (16.8%), pleural effusion (13.2%) and ascites (12%). The most frequent abnormal laboratory findings included haemoconcentration (27.8%) and severe thrombocytopenia (<10 000 in 8.5%).[4]

Tiwari S et al., studied that the outbreaks of dengue infection due to Aedesaegypti occurred in both urban and rural areas in monsoon season. Fever, headache and myalgia were mainly seen.[3]Billet HH et al., described that the hematocrit or packed cell volume (PCV) measures the volume of red blood cells compared to the total blood volume and the normal hematocrit for men is 40 to 54% while for women it is 36 to 48%.[9]In Dengue patients, plasma leakage or the third space volume loss is suggested by a rise in hematocrit while if bleeding starts, the hematocrit starts falling.[10,11] In our study, hematocrit was found to be decreased in 16.2% of male patients and in 26.3 % of female patients while raised hematocrit was not a finding in any of the patient.

In study by Yip VC et al., in a systematic review article cited that blurring of vision and scotoma were commonly seen in dengue patients. In Fundus examination, retinal

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 01, 2022

hemorrhages, macular edema, foveolitis, vasculitis, and optic neuropathy usually seen. Outcome of dengue-related ophthalmic complications is good.[6] In our study, on Fundus examination hyperemic disc is found in 3.57% patients and dot hemorrhages in 3.57% patients.

Conclusion

Dengue fever is endemic in many parts of India and worldwide. Large number of studies have been done till date all over world and it is easy to identify clinically and to confirm with rapid card test and serology by ELISA. If identified early and promptly treated, it has a good recovery rate. Recognition of early warning signals about further deterioration in the Dengue positive patients is the key in reverting disastrous situations.

Regarding ophthalmic manifestations it is easy to identify with Fundus examination. With good management prognosis/recovery is good.

In order to prevent dengue infection good education programme in community, awareness regarding cleanliness & control of vector population is pivotal.

Limitation Of Study

1. This is a retrospective study over a limited period of time.
2. Limited sample size.
3. Dengue ELISA could not be done in every patient.

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