ORIGINAL ARTICLE

CLINICAL AND LABORATORY PROFILE OF DENGUE FEVER IN KHYBER TEACHING HOSPITAL, PESHAWAR

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ABSTRACT

Objectives: To find out the frequency of various clinical and laboratory findings in patients with Dengue fever.

Material and Methods: This single center, cross-sectional study was conducted in Department of Medicine Khyber Teaching Hospital Peshawar from September, 2017 to October, 2017. A total of 3300 admitted patients with suspected dengue fever were enrolled in study. All patients with fever but dengue negative profile were excluded from study. Thorough history and physical examination were performed, and blood samples were collected from all dengue positive patients according to the already designed proforma. Blood samples were analyzed in local hospital library under supervision of consultant pathologist.

Results: A total of 3300 patients were screened for dengue NS1by Immunochromatographic Technique (ICT) and confirmed by Enzyme Linked Immuno Sorbent Assay(ELISA). Out of 3300 suspected patients with dengue fever, 612 (18.5%) patients were found positive for NS1 by ICT and ELISA both. Four hundred and eleven were males and 201 were females with male to female ratio as 2:1. The most common clinical findings were high grade fever, headache, nausea, retro orbital pain and bleeding diathesis. Thrombocytopenia, raised hematocrit levels and raised ALT were the commonest laboratory abnormalities.

Conclusion: Dengue fever has diverse clinical presentation and laboratory abnormalities.

Key words: Dengue virus, dengue fever, NS1 ICT, ELISA.

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INTRODUCTION

This fever is considering as the 2nd most prevalent vector born disease worldwide[1]. Dengue virus is an arthropod born single stranded RNA virus belonging to genus flavivirus and consists of structural and non-structural proteins[2]. There are four serotypes of Dengue virus which cause Dengue fever(DENV1, DENV2, DENV3 and DENV4). One of these four Dengue serotypes causes Dengue infection. These all serotypes are closely related to each other butantigenically distinct from each other[3].

This viral transmission occurs by mosquitoes of the genus Aedes. Dengue virus transmission occurs in the seasons of monsoon and post monsoon. As no urgent confirmatory test is available, findings of thrombocytopenia and leukopenia may points towards dengue infection[4]. Dengueinfectionis suspected in patients with symptoms like high fever, headache, eyes pain, muscles pain, joint pain, vomiting, nausea, swollen glands and skin rashes. Normally these symptoms last for two to seven days after the incubation period of four to ten days. In some cases, the persons who are infected with one dengue serotype develop bleeding and endothelial leakage upon infection with another dengue serotype. This syndrome is called dengue heamorrhagic fever (DHF)[5]. Characteristically in Dengue Hemorrhagic fever,the vascular system is disturbed and dysfunction of platelets leads to bleeding from various spots[6].Clinical features of dengue heamorrhagic syndrome are different from dengue shock syndrome. Only supportive care can be provided to these patients,

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which includes strict monitoring of the platelets levels and its replacement along with replacement of other blood products[7]. Normal full blood count doesn't rule out dengue fever but platelets count more than 50,000 and leukocyte count less than 3000 may be mark of infection and bad prognosis. Serological methods are also used for Diagnostic purpose. Specific IgM detection indicates acute infection and is enough for dengue fever diagnosis. Early diagnosis of dengue infection is important and can be made by commercially available serological assays[8]. The purpose of this study is to find outdiversity of clinical features and laboratory abnormalities in patients with dengue fever who are admitted in Khyber Teaching Hospital during dengue outbreak in 2017.

MATERIAL AND METHODS

This single center, cross-sectional study was conducted in Department of Medicine from September, 2017 to October, 2017. A total of 3300 patients were screened for dengue NS1 by Immunochromatographic Technique (ICT) and confirmed by Enzyme Linked Immuno Sorbent Assay (ELISA). Peripheral blood smear of all patients were also prepared to record serial platelets count, white blood cell count and heamatocrit. All patients who were NS1 seropositive were included in study. Those patients who had high grade fever and other features of dengue infection but NS1 negative were excluded from the study. Detailed history and clinical examination was performed of all dengue infected patients. Blood samples were collected from all dengue infected patients and analyzed in our local hospital laboratory under supervision of qualified pathologist. Clinical features like high grade fever, nausea, headache, abdominal pain, retro orbital pain, bleeding from any site etc. were recorded on preformed proforma. Similarly peripheral smear, liver function tests (LFTs), renal function tests (RFTs), urine R/E, stool R/E, X-ray chest and ultrasound abdomen and pelvis etc. were performed wherever required and recorded on predesigned proforma.The recorded data was analyzed and statical tests were applied using SPSS version 13.

RESULTS

A total of 3300patients were screened for dengue fever, amongst which 612 (18.5%)patients were NS1 seropositive cases. Out of 612 dengue positive patients,411 (67.1%)were males and 201 (32.8) were females as shown in Table 1. The highest prevalence [466 (76.1%)] of dengue fever was observed in young age group patients ranging from 15 to 40 years followed by 105 (17.1%) cases in the age group of41-60 years and 41 (6.7%) case were in age group more than 60 yea. In all age groups, males outnumbered females asshown in Table 2. Most of the cases belonged toTehkalBala298 (48.7%) andTehkalPayyan127 (20.7%),followed by other nearby localities including;NawyKaly21 (3.4%), SpeenaWarhai50 (8.1%), Peshtakhara31 (5.0%), Town Peshawar22 (3.6%), Bara road13 (2.1%), Palusai 13 (2.1%),Abdara road12 (2.0%), Pawaka (1.5%), Achanai8(1.3%) and Board Peshawar8(1.3%) as shown in Table 3.

The commonest clinical symptom was high fever with Headache. Other common features were nausea and vomiting, fluctuation in blood pressure, bleeding from any site, rashes on skin,retro orbital pain,abdominal pain and irregular in pulse rate were noted. Pedal edema, pleural and Ascitic fluid exudation were also noted as shown in Figure 1. Regarding laboratory investigations, 576(94.1%) patients had platelet countless than 150,000/cumm; mild 294(51.0%), moderate 157(27.2%) and severe thrombocytopenia 137(23.8%). In 233(38%) patients, leucopenia was recorded i.e. less than 4000/cumm. Raised ALT was noted in 507(82.8%) patients, dengue NS1 was detected in 100% patients, raised Hematocrit level was observed in 186(30.4%) patients while jaundice was noted in 21(3.4%) patients as shown in Table 4.

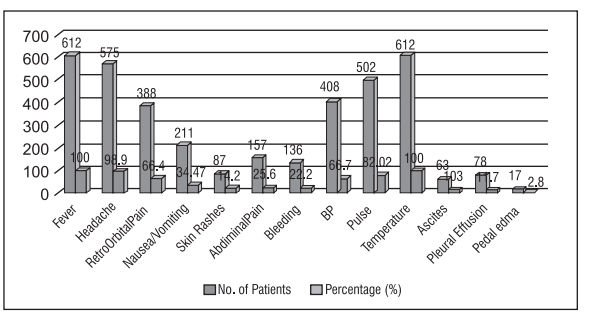

Figure 1. Distribution of different Clinical features associated with dengue fever

Table 1: Frequency distribution of dengue NS1 positive and negative patients

Different age groups	Male	Female	Total (%)
NS1 Positive Patients	411	201	612 (18.5)
NS1 Negative Patients	1792	896	2688 (81.5)

Table 2: Gender and age group wise distribution of Dengue Patients

Different age groups	Male (%)	Female (%)	Total (%)
15-40 years	310(75.4)	156 (77.6)	466 (76.1)
41-60 years	72 (17.5)	33 (16.41)	105 (17.1)
>60 years	29 (4.7)	12 (204)	41 (6.7)
Total	411	201	612

Table 3: Geographical Distribution of Dengue Patients

S.No	Place of residence	Male (%)	Female (%)	Total (%)
1	Tehkal Bala	193 (46.3)	105 (52.2)	298 (48.7)
2	Tehkal payyan	89 (21.6)	38 (18.9)	127 (20.7)
3	Nawy kaly	12(2.9)	09 (4.5)	21 (3.4)
4	Speena warai	40 (9.7)	10 (5.0)	50 (8.1)
5	Peshtakhara	23(5.6)	08 (4.0)	31 (5.0)
6	Town Peshawar	15 (3.6)	07 (3.5)	22 (3.6)
7	Abdara road	07 (1.7)	05 (2.5)	12 (2.0)
8	Bara road Peshawar	09 (2.1)	04 (2.0)	13 (2.1)
9	Pawaki	06 (1.4)	03 (1.5)	9 (1.5)
10	Achanai	02 (0.5)	06 (3.0)	8(1.3)
11	Board Peshawar	06 (1.4)	02 (1.0)	8 (1.3)
12	Palusai	09 (2.1)	04 (2.0)	13(2.1)

Table 4: Association of Hematocrit level with Thrombocytopenia, Jaundice and Leukopenia n=612

Parameter	Plateletsn=576			TLC n=233		ALT n=507		Hematocrit (PCV) n=186		
	Thrombocytopenia <150000/cumm			Leukopenia <4000/cumm		Jaundice>45 IU/L		Mild	Moderate	Severe
	50-150 Mild	30-50 Moderate	<30 Severe	<4000 Severe	>4000 Normal	>45	<45	<30	31-45	>45
Dengue Fever Patients(%)	294	157	137 (23.8)	233 (38.0)	379	507	105	100	326	186
	(51.0)	(27.2)		(38.0)	(60.9)	(82.8)	(17.1)	(16.3)	(53.2)	(30.4)

Key: TLC:Total Leucocytes Count, ALT: Alanine Transaminase, PCV: Packed Cells Volume

DISCUSSION

Dengue is an emerging health problem in developing countries, estimated 50 to 100 million cases causes in a year globally and population of the half world is at risk nowadays[1]. In our study, the frequency of different clinical outcome of dengue infection was determined at a tertiary care hospital Peshawar.

A total of612(18.5%) patients were found positive for dengue NS1 by ICT and ELISA. Almost similar findings were reported in Pakistan by other authors[10,11]. In the current study, the high frequency466 (76.1%) of dengue fever was observed in young age group patients ranging from 15 to 40 years followed by the age group 41-60 years 105 (17.1%) cases and >60 years 41 (6.7%) casas. These findings were supported by other local and global studies in Malaysia and India[12,14].

High grade fever was present in 100%of cases and it was the most important symptom of dengue fever, followed by headache, vomiting, retro orbital pain and skin rashes. Other studies also showed the same

clinical features.[11,12]. In our study,576(94.1%) patients had platelet count less than 150,000/cummpatients. A locally conducted study found almost similar frequency[15].The thrombocytopenia in dengue fever causes platelet destruction and bone marrow depressions because of defense system against platelet[16]. Leukopenia (WBC <4000/cmm) was recorded in 233 (38%) in our study. Nearly the same percentage was found in another study[17]. Similar study was also conducted in India which supported our findings[18]. High serum bilirub in was observed in 21(3.4%) patients while Ragini Singh et al[18] recorded it 17.1%.

In present study dengue NS1 was detected in all 612(100%) patients, high hemotocrit level was observed in 186(36.1%)patients. These results are in accordance with studies conducted by Lepaskshiet al and mandalet al[17,19]. The current study reported the raised ALT level in 507(82.8%) patients.Same findings were noted by Vanamaliet al[20]. was observed in 63(10.3%) patients in our study which is close to the findings of Rajesh Deshwal et al study[5]. In 78(12.7%) patients, pleural effusion was detected which is similar to Rachel Daniel et al study[21].

CONCLUSION

In Peshawar Dengue fever is an emerging health problem. The clinical presentation and laboratory profile is diverse. Local data can be utilized for devising strategies regarding prevention and management of dengue infection.

RECOMMENDATIONS

National and local guidelines must be devised regarding prevention and management of dengue infection.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

Uddin J: Study Design.

Asghar M: Study Design.

Shahzad A: Data analysis, literature search.

Khan Z: Data analysis, literature search.

Rehman N: Data analysis, literature search.

Sharif N: Data collection.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.