DEMOGRAPHIC PROFILE, CLINICAL PRESENTATION AND OUTCOME OF DENGUE FEVER IN MARDAN MEDICAL COMPLEX TEACHING HOSPITAL

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ABSTRACT

Objectives: To investigate the demographic profile, clinical presentation and outcome of patients with dengue virus infection during the 2011 outbreak of Dengue fever, to judge the clinical pattern and severity of disease in Khyber Pakhtoonkhwa.

Study Design: Cross sectional observation study.

Place and Duration of Study: Mardan Medical Complex Teaching Hospital Mardan. From July 2011 to November 2011.

Methodology: Fever clinic was established by the hospital administration in A&E department of Mardan Medical Complex Teaching Hospital. Every patient with fever was thoroughly examined and screened for dengue fever. A predesigned questionnaire was used to record history especially history of recent travel to endemic areas.

Results: Out of 66 patients, 54 (81.815%) were males and 12 (18.18%) were females. Mean age was 16——45 years (74.24%). The most common clinical features were fever (75.75 %), headache (60.60 %), retro-orbital pain (45.45 %), bruises (15.15 %) and epistaxis (7.57 %). 51 (77.27 %) patients had classical dengue fever while dengue hemorrhagic fever was observed in 15 (22.72 %) patients. All patients with Dengue hemorrhagic fever had WHO grade I or II disease. All patients responded well to treatment and mortality rate was virtually zero.

Conclusion: Though KPK has been affected by Dengue outbreaks but the clinical presentation is less severe in KPK when compared to Dengue outbreaks in other parts of the country particularly the Punjab province where WHO grade 3 and 4 presentations are common. It could be because of the difference in circulating serotypes of Dengue virus in this region or the expansion of the disease to KPK later than Punjab as severity of the disease is determined by repeated bites by the mosquitoes responsible.

Key Words: Mardan Medical Complex Teaching Hospital, Dengue Fever, Khyber Pakhtoonkhwa

INTRODUCTION

Dengue is the most rapidly spreading mosquito-borne viral disease in the world. WHO statistics report about 50-100 million cases of dengue fever and 500,000 cases of Dengue Hemorrhagic Fever (DHF), resulting in around 24,000 deaths annually [1]. Approximately 2.5 billion People live in dengue endemic countries and around 1.8 billion (more than 70%) of the population at risk for dengue worldwide live in South-East Asia and Western Pacific Region, which bear nearly 75% of the current global disease burden due to dengue[1]. In Pakistan, the first confirmed outbreak attributed to serotype DV-2 was reported in 1994 in Karachi[2], followed by reports of sporadic cases from different parts of the country. During September to December 2005, yet another epidemic of DHF due to DV-3 was reported in Karachi [3]. The largest and most severe epidemic of DHF affecting a large territory of the country however; followed next in 2006 and the predominant serotypes identified were DV-2 and DV-3 [4].

Dengue virus infection causes a spectrum of disease ranging from asymptomatic infection to undifferentiated fever, Dengue fever (DF), Dengue hemorrhagic fever (DHF) and Dengue Shock Syndrome (DSS)[5]. Clinically dengue virus infection manifests in one of the three forms: classical Dengue Fever (DF), Dengue Hemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS). The DF is characterized by high grade fever, musculoskeletal pains, retrobulbar headaches and morbilliform rash. Appearance of haemorrhagic rash or haemorrhagic manifestations in addition to classical DF characterizes the Dengue Hemorrhagic Fever (DHF). Dengue shock syndrome is characterised by hypotension, altered mental status and delayed capillary filling[6].

Though sporadic cases of Dengue fever have been reported earlier in KPK[7], an increase in the num-

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ber of cases was witnessed in 2011[8], in parallel with dengue outbreaks in other parts of the country particularly the Punjab province. While the clinical presentation of the disease has been under study in Karachi and Lahore, there is scarcity of research on the demographic profile, clinical presentation and severity of dengue virus infection in KPK. This study was undertaken to evaluate the demographic profile, clinical presentation, severity and outcome of serologically confirmed Dengue virus infection in patients presenting to Mardan Medical Complex Teaching hospital so as to get baseline epidemiological data about the disease in KPK.

Investigations:

1. Inoculation into mosquito tissue cell culture.
2. Hemaglutination inhibition test.
3. Complement fixation test.
4. IgM antibodies detection.
5. PCR for dengue virus.

METHODOLOGY

The main objective of this study was to determine the presentation of Dengue Fever patients in Punjab and MMCTH. This study was conducted in MMCTH and DHQ hospital Mardan. Later on the isolation ward for dengue fever was shifted from DHQ hospital to MMCTH and the study was finalized in MMCTH Mardan. Approval from hospital ethic committee was taken prior to conducting the study. Patients were shifted from fever clinic of A&E department to an isolation ward for dengue fever. Only those patients were included who had history of travel to Punjab specially those areas where this disease was endemic and those patients were included who had rashes, bruises and typical presentation of dengue fever. Those were also included who were IgM+ or PCR +. Those patients were not included who were negative for IgM and PCR or there were no leucopenia and neutropenia. Those were also excluded where MP+ or they were having enteric fever or other cases of fever like RTI, UTI etc.

Data was analyzed. Descriptive statistic like mean and standard deviation was calculated for quantitative variables like age while a frequency with percentage was used for qualitative data like gender, anemia, leucopenia and thrombocytopenia.

RESULTS

A total of 66 patients were admitted to the fever clinic established at Mardan Medical Complex Teaching hospital from July 2011 to November 2011. They were enrolled in the study after serological confirmation of Dengue virus infection or strong clinical impression based on WHO criteria. Among these, 54 (81.81 %) were males and 12 (18.18 %) were females. Patients in the Age group of 10 – 70 years were included in the study. Most commonly affected age group was 16 – 45 years (74.24 %), followed by age groups of > 45 years (18.18 %) and < 15 years (07.57 %). Most of the patients belonged to District Mardan (74.24 %) while the remaining was from neighbor districts. A high proportion of the patients had history of recent travel to the endemic areas of the country, particularly Lahore (48.48 %), Rawalpindi (13.63 %) while no significant travel history could be sought in 39.39 %.

All the patients had typical presentation of dengue virus infection i.e. fever, malaise and myalgia,

Presentation

Symptom	No. of patients	Percentage
Fever	50	75.75%
Headache	40	60.60%
Retro-orbital pain	30	45.45%
Bruises	10	15.15%
Bleeding from nose	05	7.57%

Table 1: Sex Wise Distribution: N=66 Data Presentation: Total Cases N=66

Males	Females	Total
54	12	66

Table 2:Age wise distribution n=66

Age Group in Years	Patients	%age
0-15 years	05	07.57%
16-45 years	49	74.24%
46 and Above	12	18.18%

Table 2: Age Wise Distribution: N=66

District	Patients	%age
Mardan	49	74.24%
Nowshera	08	12.12%
Charsadda	05	07.57%
Swabi	04	06.06%

Table 4: Travel History: n=66

Travel Location	Males	Females	Total	%age
Lahore	30	02	32	48.48%
Rawalpindi	08	01	09	13.63%
Kabul Afghanistan	01	00	01	01.51%
No Travel History	15	09	24	39.39%

Table 5: Diagnostic Criteria: n=66

ICT Method		Confirmed By ELISA	Clinical Diagnosis +/_ Platelete count
IgM	IgG		
45	10	20	21

Table 6: Outcome: n=66

Outcome	Number	%age
Improved&Discharged	55	83.33%
Reffered	04	06.06%
LAMA	06	09.09%

headache, retro orbital pain, skin rash or any hemorrhagic manifestations. The most common symptoms in order of frequency were fever (75.75 %), headache (60.60 %), retro-orbital pain (45.45 %), skin bruises (15.15 %) and bleeding from the nose (7.57 %). Based on WHO case definition, 51 patients had Dengue fever (77.27 %) while Dengue hemorrhagic fever was observed in 15 patients (22.72%). Luckily, all the cases of Dengue hemorrhagic fever were either WHO grade I or II. Severe disease typified by DHF grade III and IV was not observed in any of the patients. With treatment, all the patients had a favourable outcome. All patients improved with treatment and 55 (83.33 %) were discharged in satisfactory condition while 6 (09.09 %) of them left against medical advice (LAMA) after improvement. Only 4 (06.06 %) patients were referred to other hospitals on patient's preference. Case fatality rate was virtually zero.

DISCUSSION

The outbreak under probe was investigated from July 2011 to November 2011 however; peak incidence was obsserved during August to October 2011. This time marks the peri–monsoon period in Pakistan and can be explained by increased breeding of the mosquito vector due to increased ambient temperature[9] and humidity[10] during this season. This observation is partly consistent with the 2006 epidemic at Karachi[11,12] which occurred in October 2006 but tallies more with the epidemics of 2008 and 2011 at Lahore. This observation is also shared by a South Asian study conducted by Gupta et al[13].

Majority of the patients (60.61 %) had history of recent travel to the endemic areas of Punjab which favor the acquisition of virus and hence, the disease but a significant proportion (39.39 %) of patients had no significant travel history. It could be therefore, postulated that Dengue virus infection is endemic in KPK[7].

The data about shift in median age of Dengue virus infection is conflicting. The most commonly affected age group in our study was 16-45 years (74.24 %). This could be misleading because majority of the participants were adults and pediatric age groups were not the focus of the study. Despite these limitations, this observation is partly consistent with the findings of Humayoun MA et al.[14] who reported peak incidence in the 20-30 years age group. This is however; in contrast to the findings of a Karachi based study by Khan E. et al that reported peak incidence in the 11-25 years age group[15].

Male preponderance (81.81 %) observed in our study, is shared by few other local[12] and South Asian[16,17] studies. It could be partly explained by the social adaptation in these regions that males spend more time outdoor than females thereby, exposed more to mosquito bites.

The most common symptoms and signs in order of frequency included Fever (75.75%), headache (60.60 %), retro-orbital pain (45.45%), bruises (15.15 %) and epistaxis (7.57 %). These features are comparable and overlap significantly with findings of other studies. Minor differences in the frequency of clinical symptoms and signs could be ignored partly because the severity of the underlying diseases has a reflection on the symptoms and signs [11,12,14,15].

Majority of the patients (77.27 %) were found to have Dengue fever (DF) while a smaller proportion (22.72 %) had Dengue hemorrhagic fever (DHF). All the DHF cases were less severe, typified by WHO grade I or II. None of the patients had WHO grade III or IV DHF. These tolls were in contrast to the Dengue epidemic 2008 at Lahore[14] where a high proportion of

patients had DHF (56.4 %) as compared to Dengue fever (41.8 %) and in addition, few cases (1.8 %) of Dengue Shock Syndrome (DSS) were also reported. Wasay M et al[18] in a case series report of 225 patients admitted to Agha Khan university Hospital with confirmed Dengue virus infection reported similar findings with high proportion of DHF (36 %) and DSS (3%).

All the enrolled patients in our study had a very favorable outcome. Apart from few who left against medical advice after improvement or were referred to other hospitals and were lost to follow up, all of the remaining patients recovered completely and no case fatality was reported. These statistics could be explained by the less severe presentation of the disease and therefore, good response to treatment.

CONCLUSION

Current outbreak of Dengue virus infection in KPK can be attributed partly to the endemic nature of the disease in KPK but in large part, to travel across the country particularly to highly endemic areas of Punjab hit by outbreaks of the disease. Our study established that the current outbreak in KPK was a less severe one in terms of the high proportion of patients with Dengue fever, much lower proportion of Dengue hemorrhagic fever and virtual absence of Dengue Shock Syndrome. Morever, the study encountered only Dengue hemorrhagic fever of low severity typified by WHO grade I or II while more severe disease typified by WHO grade III and IV is more common in Punjab. The researchers and medical professionals however; need to be watchful in the coming days as the expansion of the disease to this region coupled with presence of the mosquito vector in this region and possible introduction of new dengue virus serotypes could make the matter worse in the time coming ahead. Since the severity of the disease is partly determined by the serotype of the infecting virus and repeated bites by the mosquito, further outbreaks could be expected to overwhelm the community as well as the health sector. After all, history repeats itself.

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