

# Complications of Dengue Fever - Experience in Tertiary Care Hospitals Khyber Pakhtunkhwa

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## ABSTRACT

**Objective:** To determine the nature of complications in dengue fever in Khyber Pakhtunkhwa province.

**Study Design:** Descriptive study.

**Place and Duration of Study:** This study was conducted at two major tertiary care hospitals of Khyber Pakhtunkhwa from July 2020 to November 2020.

**Material and Methods:** Demographics, clinical features and laboratory findings were recorded on pre-designed Performa.

**Results:** Conditions complicating dengue fever included Hepatitis (26.3%), Pneumonia (15.7%), Dengue Hemorrhagic Fever (15.7%), Pleural effusion (10.5%), Multi-organ Failure (10.5%), Renal failure (7.8%), Dengue Shock Syndrome (5.2%), Encephalopathy (2.6%) and Myocarditis (2.6%).

**Conclusion:** Early diagnosis and treatment is important in order to avoid complications in dengue fever.

**Key Words:** Dengue, Fever, Complications.

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## INTRODUCTION

Dengue is the most important arbovirus disease of humans, in terms of both morbidity and mortality. It was first described by Benjamin Rush in 1780 as "break bone fever." Since the end of World War II, the incidence of dengue disease has greatly increased.<sup>1</sup>

Dengue fever is a human arbovirus infection caused by a ribonucleic acid (RNA) virus of the Flavivirus genus. There are four distinct serotypes of dengue viruses causing three different clinical patterns of the disease: dengue fever (DF), dengue hemorrhagic fever (DHF) and dengue shock syndrome. In 1986, the World Health Organization (WHO) defined Dengue hemorrhagic fever as an acute febrile disease caused by one of the four serotypes of dengue viruses and characterized by a bleeding diathesis.

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Dengue shock syndrome is defined as patients having dengue fever with circulatory collapse.<sup>2</sup>

The first case of dengue was reported in Karachi in 1994 and in Lahore in 2007.<sup>3</sup> Thereafter the disease spread rapidly to other cities. According to official reports, 3305 cases of dengue fever were diagnosed in Karachi in 2010<sup>4</sup>. There was an outbreak of dengue fever in whole country in 2010 during monsoon season. Effective drainage system is the only preventive measure so that no stagnant pools and ponds stay for longer duration after rain<sup>5</sup>.

Very little work has been done to determine nature of complications in dengue fever. We aimed at studying the frequency of common complications in our community. This study will help us in providing the latest and updated information regarding the magnitude of common complications of dengue fever in the country. More over the results of this study will be shared with other health professionals and will be used for further research work.

## MATERIALS AND METHODS

**This descriptive study was conducted from July 2020 to November 2020 at departments of Medicine, Lady Reading hospital Peshawar and Mardan medical complex Mardan. Lday Reading is the oldest and biggest hospital providing health services to the people all over the province as well as receiving patients from Afghanistan.**

**Data Collection Procedure:** Our study was approved by hospital ethical committee. Non-probability consecutive sample technique was used. All patients

with dengue fever, having one or more symptoms and positive dengue specific IgM or dengue NS1 antigen were enrolled. Patients with bleeding diathesis were excluded from the study. Diagnosed cases of liver diseases, cerebral malaria, meningoencephalitis, respiratory tract infection were also excluded. Written inform consent was taken from all the patients.

After taking detailed history, examination and bio data entry, all patients were looked for specific complications. 2 cc blood was taken in oxalated bottle, 2cc blood was taken in citrated bottles and 4 cc blood was collected in gel bottle. Complete blood count including platelets count was performed on CEL-DYN-RUBY (Abbot) machine and even manually with a high power microscope and ncubar's chamber where required. Serum ALT was measured by P-800 Modular Machine and PT, APTT was measured by SYSMEX-CA-500.

All information including age, gender, duration of disease, residence, socioeconomic status was recorded in a pre-designed proforma.

**Data Analysis:** Statistical analysis was performed at SPSS version 23. Mean and standard deviation were computed for continuous variable like age, duration of disease. Frequency and percentages were measured for categorical variables like gender, residence, socio economic status and common complications.

**RESULTS**

196 confirmed cases of dengue fever were included in the study. Most of dengue cases 102(52.04%), occurred in district Peshawar, while 94(47.95%) cases were reported from district Mardan. Majority of the cases 117(59.69%) were males and 79(40.30%) were females. Male to female ratio was 1.48:1. Maximum

number of cases were in age group of 14-48 years with mean age of 35years + 1.24 SD. In the study 158 (80.61%) patients recovered uneventfully, and 38(19.39%) developed complications of dengue fever. Average period of hospital stay was 6-9 days.

Almost all patients presented with fever 192(97.95%), followed by myalgia 130(66.32%), headache 98(50.0%), vomiting 98(50.0%), skin rash 96(48.97%).

Hemorrhagic manifestations included bleeding gums in 20(10.20%) and epistaxis in 18 (9.1%) subjects as shown in table 1.

**Table No.1: Clinical Features in Dengue Fever**

S.N	Clinical Features	Percentage(%)
1	Fever	97.9
2	Myalgia	66
3	Vomiting	50
4	Headache	50
5	Skin rash	48.9
6	Bleeding gums	10
7	Epistaxis	10

As seen in table 02, among the 38 patients who had complications, 10 (26.31%) had hepatitis and 04(10.53%) had multiorgan failure. Respiratory complications included Pneumonia in 06 (15.78%) patients and Pleural effusion in 04 (10.52%) cases. Dengue hemorrhagic fever occurred in 06(15.78%) subjects, while 02 (5.26%) suffered from dengue shock syndrome. 03(7.89%) patients were complicated by renal failure during the course of illness and needed renal replacement therapy. Encephalopathy was seen in 02(5.26%) patients and 01(2.63%) had myocarditis with heart failure.

**Table No.2: Complications in Dengue Fever**

S.N	Complications	N	%	Peshawar		Mardan	
				n	%	n	%
1	Hepatitis	10	26.3	06	60	04	40
2	Pneumonia	06	15.7	04	66.6	02	33.3
3	DHF	06	15.7	04	66.6	02	33.3
4	Pleural effusion	04	10.5	02	50	02	50
5	M.O.F	04	10.5	03	75	01	25
6	Renal failure	03	7.8	02	66.6	01	33.3
7	DSS	02	5.2	01	50	01	50
8	Encephalopathy	02	5.2	00	00	02	100
9	Myocarditis	01	2.6	01	100	00	00
<b>Total</b>		38	100	23	60.53	15	39.47

DHF=Dengue Hemorrhagic Fever, MOF=Multi organ failure, DSS=Dengue Shock Syndrome.

**DISCUSSION**

Dengue is rising as an important and major public health problem of the tropical and sub-tropical areas nowadays. About 50-100 million people are infected every year. The clinical features of dengue fever range

from asymptomatic to sever illness that may lead to death if not treated properly. Mortality is less than 1% in self-limiting disease<sup>2</sup>.

Male to female ratio in our study was 1.48:1 respectively. Identical pattern was observed by Ashwini Kumar<sup>6</sup> et.al and Chandralekha<sup>7</sup> et.al in their respective

studies in North India Dengue outbreak. Clinical profile of dengue showed that fever was the most common presenting symptom (97.9%), followed by myalgia, headache, nausea and vomiting. Similar kind of study from Singapore statistically linked fever, headache, joint pains and skin rashes with dengue fever<sup>8</sup>. It is imperative to note that dengue should be considered in the differential diagnosis of all patients with fever and gastrointestinal symptoms.

Of the 196 subjects, 38 cases showed complications. Hepatitis was noted in 10 patients. It could be due to the liver injury caused by the dengue virus. Pleural effusion was seen in 4 cases. Congruent incidence has been reported by Shabbir<sup>9</sup> et al. and Ejaz<sup>10</sup> et al in their studies. Pleural effusion in dengue fever results from plasma leakage into the pleural cavity and is one of the severity markers. All effusions in our patients resolved spontaneously and did not require any additional intervention.

In our study dengue hemorrhagic fever was found in 15.7% patients, while dengue shock syndrome was seen in minority group (5.26%). An exclusive study on dengue hemorrhagic fever and dengue shock syndrome conducted in Peshawar in 2018 reported same results, DHF 12% and DSS 5.0%<sup>11</sup>. Our results are also in concordance with the study conducted in Udupi district, Karnataka, India in 2010<sup>6</sup>.

One of our study patient developed myocarditis during stay in hospital. Initial rhythm on electrocardiogram was sinus tachycardia followed by atrial fibrillation. Cardiac markers including Troponin I and CK MB were elevated. Pathophysiology of cardiac involvement in dengue fever is not known. However, it has been suggested that it could be due to cytokine mediated immune injury<sup>12-13</sup>.

Overall outcome of patient care was good. Six deaths were reported during study period. As a whole mortality was 3.0%.

Present study is limited to only two centers. Different multicenter studies are needed to emphasize the importance of different aspects of dengue fever.

## CONCLUSION

Dengue is a devastating disease and can lead to complications if not treated early. Awareness is important and demands the attention of public health care providers.

### Author's Contribution:

Concept & Design of Study:	Ziauddin
Drafting:	Shah Zeb, Rehmanuddin, Muhammad Abbas
Data Analysis:	Shahabuddin Zia, Rehmanuddin
Revisiting Critically:	Ziauddin, Shah Zeb, Manzoor Hussain
Final Approval of version:	Ziauddin

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

## REFERENCES

- Guzman MG, Kouri G. Dengue: An update. *Lancet Infect Dis* 2002;2:33-42.
- World Health Organization. Dengue and dengue haemorrhagic fever. Fact Sheet 2002;117: Available from: <http://www.who.int/media/centre/factsheets/fs117/en/> [last accessed on 2009 Dec 20]
- Butt MA, Shehzad M, Iqbal A, Semaab. Dengue fever outbreak 2010: Clinical experience in a teaching hospital of Lahore Pakistan. *Pak J Med Health Sci* 2011;5(2):265-9.
- Shamim M. Frequency, pattern and management of acute abdomen in dengue fever in Karachi, Pakistan. *Asian J Surg* 2010;33:107-13.
- Syed M, Saleem T, Syeda UR, Habib M, Zahid R, Bashir A, et al. Knowledge, attitudes and practices regarding dengue fever among adults of high and low socioeconomic groups. *J Pak Med Assoc* 2010;60:243-7.
- Kumar AR, Chythra R, Pandit V. Clinical Manifestations and Trend of Dengue Cases admitted at tertiary Care Hospital, Udupi District, Karnataka. *Ind J Community Med* 2010;35(3): 386-90.
- Chandralekha, Gupta P, Trikha A. The north Indian dengue outbreak 2006: a retrospective analysis of intensive care units admissions in a tertiary care hospital. *Trans R Soc Trop Med Hyg* 2008;102: 143-7.
- Goh K. Dengue a re-emerging infectious disease in Singapore. K.Goh (Ed), *Dengue in Singapore*. Vol.2. Technical Monograph Series, Institute of Environmental Epidemiology, Ministry of Environment, Singapore; 1998.p.334-9.
- Shabbir M, Ameen F, Roshan N, Israr M. Nature and Clinical Course of Pleural Effusion in Dengue Fever. *Int J Int Emerg Med* 2018;1(2):1-2.
- Ejaz K, Khursheed M, Raza A. Pleural effusion in dengue. Karachi perspective. *Saudi Med J* 2011; 32(1):46-9.
- Ullah R, Khan RN, Ghaffar T, Naz S. Frequency Of Dengue Hemorrhagic Fever and Dengue Shock Syndrome in Dengue Fever. *Saidu Med J* 2018;8(1):31-34.
- Hober D, Poli L, Roblin B, Gestas P, Chungue E, Granic G, et al. Serum levels of tumor necrosis factor-alpha (TNF-alpha), interleukin-6 (IL-6), and interleukin-1 beta (IL-1 beta) in dengue-infected patients. *Am J Trop Med Hyg* 1973;48:324-31.
- Hober D, Delannoy AS, Benyoucef S, Groote DD, Wattré P. High levels of sTNFR p75 and TNF alpha in dengue-infected patients. *Microbiol Immunol* 1996 40:569-573.