

Epidemiological Profile of Dengue Fever Cases in Azad Jammu & Kashmir, Pakistan: 2016

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ABSTRACT

Background: The first outbreak of Dengue fever was reported in State of Azad Jammu & Kashmir (AJ&K) in 2016.

Objective: This study was carried out to assess the magnitude of dengue fever and its description with respect to socio demographic and clinical characteristics during 2016 in AJ&K.

Methodology: This descriptive study was carried out on secondary data received at the Directorate of Communicable Diseases Control (CDC) Muzaffarabad. A case was defined as "any resident of state of AJ&K, presenting with fever and having any two of the symptoms; Headache, retro-orbital pain, myalgia, arthralgia, nausea, vomiting, abdominal pain and bleeding, and found positive on screening with Immune chromatographic IgM/IgG rapid test or NS1Ag from 1st January 2016 to 31st December, 2016". Data was analyzed by person place and time and frequencies proportions and rates were calculated.

Results: A total of 388 cases were recorded in which 61.85% (n=240) were males. Majority of the cases (98.7%) were reported from district Muzaffarabad. The median age of cases was 30 years (range 4-72 yrs). Majority of cases (78%) were below 40 years. The attack rate was highest in age group 20-29 years (25/100,000 population) The Epi-curve showed that index case was reported on 21st August 2016. Multiple peaks were noted thereafter & epidemic subsided in November 2016. Fever was associated with headache (90%), myalgia (86%), retro-orbital pain (60%), nausea (51%) vomiting (45%) abdominal pain (38%) arthralgia (35%) and rash (20%) of the cases. Diagnosis was made on NS1 in 30% & IgM serology in 70% of the cases. Mortality rate was zero and recovery rate was 100%.

Conclusions: Majority of cases were males below 40 years. Headache, retro-orbital pain and myalgia were commonly associated symptom with fever in dengue patients and all cases recovered fully with treatment. Dengue surveillance and community awareness regarding its prevention are keys to keep it under control in AJ&K.

Keywords: Vector Borne, Dengue Profile, AJ&K

Introduction

Dengue fever is a viral disease which is transmitted by specific species of mosquitoes called *aedes aegypti* and *aedes albopictus*. In recent decades, there is dramatic increase in the global incidence of dengue fever and approximately half of the world population is at risk of developing dengue. About 2.5 billion people are residing in the endemic areas of subtropical and tropical regions. 50-100 million Dengue and Dengue Hemorrhagic Fever cases occur each year.

About 500,000 patients are hospitalized world widely with 25,000 deaths annually.¹ Dengue virus is flavivirus having four serotypes DENV1, DENV2, DENV3 and DENV4. Approximately 75-80% of dengue virus infections are asymptomatic. In symptomatic cases, typically the symptoms develop between 4-7 days after the bite of an infected mosquito. The symptoms of dengue virus infection range from mild to incapacitating high grade fever, with severe headache, retro-orbital pain, myalgia, arthralgia, and rash. Dengue hemorrhagic fever is characterized by fever, abdominal pain, persistent vomiting, platelet depletion and bleeding leading to death.

In Pakistan, the first serologically confirmed case of Dengue Fever was reported in 2005 from Karachi.² In

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Lahore; there was a massive outbreak in 2011 in which over 14000 confirmed cases were registered out of which 300 cases lost their life.³

The total registered cases of dengue fever were 41311 from year 2012 to year 2016 in Pakistan. The incidence of dengue fever in Pakistan is increased during hot, humid and rainy season, while fewer cases are reported during winter and summer. The peak of dengue cases are reported during September and October. In the State of Azad Jammu and Kashmir, the first outbreak was reported in 2016, which affected mainly district Muzaffarabad.⁴ Majority of the dengue fever cases were admitted in Abbas institute of Medical Sciences Muzaffarabad. Due to high influx of the patients, a separate “dengue ward” was established in the hospital.

This study was carried out to assess the magnitude of dengue fever and its description with respect to time, place and person, socio demographic and clinical characteristics of the dengue cases registered during 2016 across the State of Azad Jammu and Kashmir (AJ&K).

Material & Methods

This study was carried out on secondary data of dengue fever cases received at the Directorate of Communicable Diseases (CDC), Department of Health Muzaffarabad AJ&K. The permission for carrying out this study was obtained from Director Health Services CDC AJ&K as there is no ethical review board in Health Department AJ&K.. A suspected case was defined as “Any resident of Azad Jammu and Kashmir, presenting with fever and having any two of the symptoms; Headache, retro-orbital pain, myalgia, arthralgia, nausea, vomiting, abdominal pain and bleeding, and found positive on screening with Immunochromatographic IgM/IgG rapid test or NS1Ag from 1st January 2016 to 31st December 2016”. The inclusion and exclusion criteria were chalked out.All admitted patients in public sector hospital who were diagnosed as case of dengue fever were included in the study while those cases of febrile illness having no serological evidence of dengue fever were excluded from the study. Line list of all the cases of dengue fever reported and registered in Azad Jammu and Kashmir during 2016 was carried out in MS Excel. Data was analyzed by person place and time and frequencies proportions and different rates were calculated

Results

Descriptive Epidemiology showed that total 388 dengue cases were recorded and registered in AJ&K during 2016 in which 61.85% (n=240) were males.

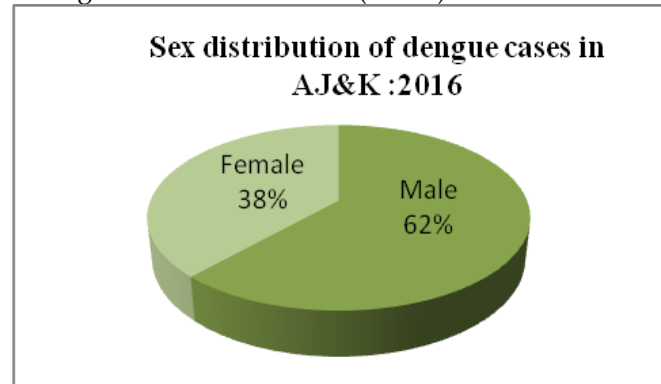


Figure-1: Gender distribution of dengue cases in AJ&K

Majority of the cases (98.7%) were reported from District Muzaffarabad.

Table 1: Distribution of Dengue fever cases in AJ&K-2016

Sr. #	Name of District	Dengue cases reported
1	Bagh	01
2	Bhimber	-
3	Havali	01
4	Jehlum Valley	-
5	Kotli	02
6	Mirpur	-
7	Muzaffarabad	383
8	Neelum	-
9	Rawalakot	01
10	Sudhnoti	-
Total		388

Out of total cases reported from district Muzaffarabad, 376 was admitted in Abbas Institute of Medical sciences while 07 patients were admitted in Sheikh Khalifa Bin Zayid Hospital Muzaffarabad. The median age of cases was 30 years (range 4-72 yrs). The age was distributed in 10 years intervals and can be seen that 78% of the cases are under the age group of 40 years.

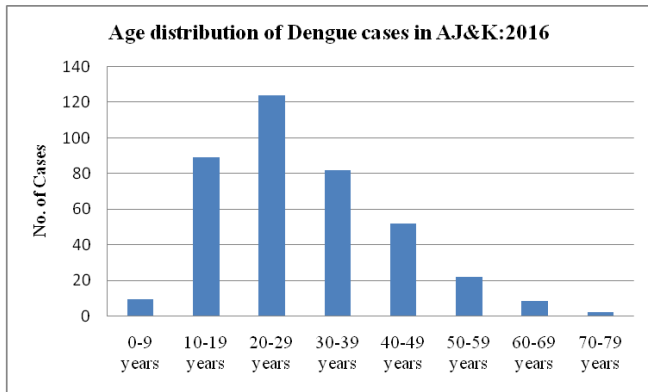


Figure2 Age distribution of Dengue cases in AJ&K

The overall attack rate was 10/100,000 population.

Sr.#	Age Groups	Dengue cases	Attack Rate per 100,000 population
1	0-9 years	09 (2.3%)	01
2	10-19 years	89 (22.9%)	16
3	20-29 years	124 (31.9%)	25
4	30-39 years	82 (21.1%)	19
5	40-49 years	52 (13.4%)	16
6	50-59 years	22 (5.6%)	13
7	60-69 years	08 (2.0%)	06
8	70-79 years	02 (0.5%)	03
Total		388	Overall attack rate 10/100,000 population

The attack rate was heighest in age group 20-29 years(21/100,000 population) The Epi-curve showed that index case was reported on 21st August 2016.Multiple peaks were noted thereafter & epidemic subsided completely in November 2016.

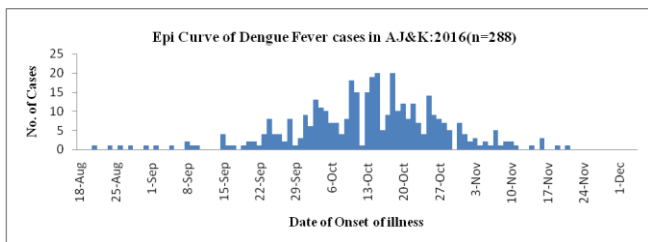


Figure-3

Fever was associated with headache (90%), myalgia (86%), retro-orbital pain (60%), nausea (51%) vomiting (45%) abdominal pain (38%), arthralgia (35%) and rash (20%) of the cases.

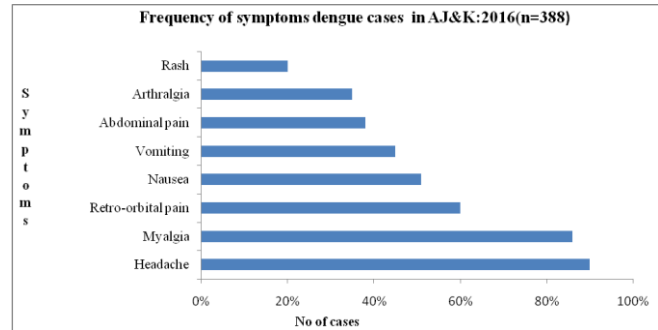


Figure-4: Frequency of Clinical symptoms of Dengue Fever in AJ&K: 2016

Out of total cases 30% were diagnosed on NS1 antigen while 70% of cases were diagnosed on IgM dengue serology. The mortality rate was zero and all cases recovered fully with treatment.

Discussion

Dengue fever has become major public health issue because of its increasing incidence globally during the last four decades. It has turned into endemic state in Pakistan as regular outbreaks have been reported across the country.¹ The State of Azad Jammu And Kashmir was dengue free before 2016. A large outbreak was recorded in August 2016 to October 2016 in Muzaffarabad AJ&K⁴. Our study was aimed to assess the magnitude of the problem and to evaluate the characteristics of reported cases. The median age of dengue infection in our study was 30 years in consistence with median age of infection found in many other studies conducted in Pakistan and abroad^{5, 6}. Majority of patients who suffered were males and were below 40 years of age, in contrast to our study the risk of dengue was found to increase with age in a study conducted in Brazil and Taiwan.^{7,8} The clinical presentation of dengue fever has wide spectrum^{1,11} It ranges from asymptomatic cases to undifferentiated febrile illness, dengue fever, dengue hemorrhagic fever including dengue shock syndrome.⁹ The most typical symptoms in dengue fever in our study were onset of high grade fever associated with headache, myalgia, retro orbital pain and nausea which is in consistence with study findings at many other places.^{4,10,11} The hemorrhagic manifestation of dengue fever ranging from bruises, sub-conjunctival bleeding, epistaxis, gingival bleeding ,hemoptysis, hematemesis and bleeding per vagina were insignificant in the reported cases in our study.^{4,12}

The differential diagnosis of dengue fever includes a wide spectrum of acute febrile illnesses like malaria, enteric fever, upper respiratory tract infections, urinary tract infections, acute gastro enteritis and acute viral hepatitis in tropical countries.⁴ The clinical features of dengue fever are similar in Chikungunya and Zika viral infection. There are no reports of confirmed cases of Zika virus infections in Pakistan so far, however Chikungunya fever has become endemic in Karachi and coastal area of Sindh and Baluchistan and should be considered in differential diagnosis in our local context.¹

The clinical diagnosis of dengue fever was confirmed by NS1 antigen in 30% and by IgM serology in 70% of the reported cases. Dengue serology was used as effective diagnostic test in many other countries across the globe.^{13,14}

The general public considers dengue fever as a serious disease due to lack of awareness and strategies about its preventive and control measures.^{15,16,17} Dengue fever remained self limiting with no mortality in Azad Jammu & Kashmir during the present outbreak.

Conclusion

Male population with age less than 40 years is mostly affected group. Like many other viral infections, there was fully recovery with no morbidity or mortality. Preventive measures like house to house survey to determine the density of vector mosquito, identification and destruction of mosquito larval breeding sites, indoor residual spray in high risk areas, community based health education campaign for proper solid waste management, protection against day biting mosquitoes including use of screening of windows and doors, protective clothing and use of mosquito repellants and finally continuous surveillance for early detection of the outbreaks and response.

Recommendations

Dengue surveillance and community awareness regarding its prevention are keys to keep dengue under control in Azad Jammu & Kashmir.

Conflict of Interest: Nil

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- B. Experimentation/Study Conduction
- C. Analysis/Interpretation/Discussion
- D. Manuscript Writing
- E. Critical Review
- F. Facilitated for Reagents/Material/Analysis

