Asian Journal of Applied Science and Technology (AJAST)
(Open Access Quarterly International Journal) Volume 1, Issue 9, Pages 147-150, 2017

A Review Study of Dengue Hemorrhagic Fever and Investigation of Dengue Virus

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Article Received: 05 August 2017 *Article Accepted: 21 September 2017* *Article Published: 27 October 2017*

ABSTRACT

Dengue fever can be caused by any one of four types of dengue virus: DEN-1, DEN-2, DEN-3, and DEN-4. Only infected by at least two, if not all four types at different times during your lifetime, but only once by the same type. Dengue virus infections get from the bite of an infected Aedes mosquito. Mosquitoes become infected when they bite infected humans, and later transmit infection to other people they bite. Two main species of mosquito, *Aedes aegypti* and *Aedes albopictus*, have been responsible for all cases of dengue transmitted in this country. Dengue is not contagious from person to person. Symptoms of typical uncomplicated (classic) dengue usually start with fever within 5 to 6 days after you have been bitten by an infected mosquito and include, High fever, up to 105 degrees Fahrenheit, Severe headache, Retro-orbital (behind the eye) pain, Severe joint and muscle pain, Nausea and vomiting, Rash. The rash may appear over most of your body 3 to 4 days after the fever begins. Symptoms of dengue hemorrhagic fever include all of the symptoms of classic dengue plus, Marked damage to blood and lymph vessels, Bleeding from the nose, gums, or under the skin, causing purplish bruises. The present study was focused on dengue fever, dengue hemorrhagic and dengue shock syndrome and their treatment outcome and effect of transfusion of blood products in dengue hemorrhagic fever and dengue shock syndromes. All cases admitted to medical wards of CIMS Bhopal hospital were taken for study that is, the extended monsoon period. All dengue seropositive cases admitted and treated in the CIMS Bhopal were included. This case study showed that identify and determine the general health problems and needs of the patient with an admitting diagnosis of Dengue Hemorrhagic Fever. Also intends to help patient promote health and medical understanding of such condition through the application of the nursing skills.

Keywords: Dengue, Hemorrhagic fever, Mosquitoes, Virus: DEN-1, DEN-2, DEN-3 and DEN-4.

1. INTRODUCTION

Dengue fever is an infectious disease carried by mosquitoes and caused by any of four related dengue viruses. This disease used to be called “break-bone” fever because it sometimes causes severe joint and muscle pain that feels like bones are breaking, hence the name. Health experts have known about dengue fever for more than 200 years. Dengue fever is found mostly during and shortly after the rainy season in tropical and subtropical areas of India, Africa, Southeast Asia and China, Middle East, Caribbean Central and South America, Australia, South and Central Pacific. An epidemic in Hawaii in 2001 is a reminder that many states in the United States are susceptible to dengue epidemics because they harbor the particular types of mosquitoes that transmit it. Worldwide, more than 100 million cases of dengue infection occur each year. This includes 100 to 200 cases reported annually to the Centers for Disease Control and Prevention (CDC), mostly in people who have recently traveled abroad. Many more cases likely go unreported because some health care providers do not recognize the disease. During the last part of the 20th century, many tropical regions of the world saw an increase in dengue cases. Epidemics also occurred more frequently and with more severity. In addition to typical dengue, dengue hemorrhagic fever and dengue shock syndrome also have increased in many parts of the world. This form of dengue disease can cause death. Symptoms of dengue shock syndrome-the most severe form of dengue disease-include all of the symptoms of classic dengue and dengue hemorrhagic fever, plus, Fluids leaking outside of blood vessels, Massive bleeding, Shock (very low blood pressure).[1] This form of the disease usually occurs in children (sometimes adults) experiencing their second dengue infection. It is sometimes fatal, especially in children and young adults. WHO (World Health Organization) bulletin updated as on March 2017, reported 60% of world population are at risk of

exposure, nearly 5,000,000 people need hospitalization out of which 2.5% die.[3] The monsoon of 2017 June to September several reported as positive dengue fever. As Career Institute of Medical Sciences College collected the sample of vector borne diseases such as malaria, Chikungunya and dengue fever cases were on the rise and sent the collected sample for further investigation in District Hospital Bhopal. This study was focused on dengue fever, dengue hemorrhagic and dengue shock syndrome and their treatment outcome and effect of transfusion of blood products in dengue hemorrhagic fever and dengue shock syndromes. All cases admitted to medical wards of CIMS Bhopal hospital were taken for study that is, the extended monsoon period. All dengue seropositive cases admitted and treated in the CIMS Bhopal were included. This case study showed that identify and determine the general health problems and needs of the patient with an admitting diagnosis of Dengue Hemorrhagic Fever, Type 1. Also intends to help patient promote health and medical understanding of such condition through the application of the nursing skills.

2. MATERIALS AND METHODS

This is an observational study of seropositive dengue fever cases only. Fevers due to malaria, typhoid, other viral fevers and microbial infections were excluded from the study. The Career Institute of Medical Sciences College and District hospital Bhopal Ethical Committee approval was obtained. All the admitted patients were assessed clinically for fever and dehydration and meticulously looked for any bleeding manifestations by visual, tourniquet testing, bleeding time as assessed by Duke method and were graded as per guidelines of National Vector Borne Control Programme. All patients were subjected to investigations that include complete blood counts, bleeding time, platelet counts, packed cell volume on daily basis and blood grouping. Liver function tests, renal functional tests, blood cultures, urine routine and stool examination for occult blood, electrocardiography, X-rays, ultrasound abdomen, computed tomography and magnetic resonance imaging scans and arterial blood gas analysis were done in needed cases. Serological evaluation of dengue fever cases were done by immune-chromatographic technique using Ab Comb Standard Diagnostic Kit for NS 1 antigen and IgM and IgG antibody capture by Standard Diagnostic Kit. [1] The test results conducted by above kits are in par with the results obtained by ELISA methods. Comparative serological evaluation study from CMI College, Bhopal. However, patients with dengue hemorrhagic fever and dengue shock syndrome were treated with blood fresh frozen plasma (FFP) and random pooled donor (RDP) and single pooled donor if the platelet counts were below 50,000 cells/cu mm.[2]

Table 1. Collected Samples for investigations

Name of the Patients and Age	Nature of Specimen	Investigation required	Date of Sample Collection	Date & Place (Lab) where sample sent
Ms. Tanima Umare 24 year	Serum	Dengue	25.09.2017	25.09 2017/ JP Hospital Bhopal
Mr. Shoib khan 14 year	Serum	Dengue	19.09.2017	19.09.2017/ District Malaria office Bhopal
Mr. Manish Kumar 19 Year	Serum	Dengue	11.09.2017	11.09 2017/ District Malaria office Bhopal
Mr. Kamlesh Singh 22 year	serum	Dengue	22.09.2017	22.09 2017/ JP Hospital Bhopal

3. RESULT AND DISCUSSION

The total number of male and female fever cases admitted and treated medical wards of Career Institute of Medical Sciences and District Hospital, Bhopal are shown in (Table 1). [5] All the case had fever of varying duration from 4 to 5 days. Body pains, myalgia, backache, arthralgia, headache, retro-orbital pain in, upper respiratory catarrh with dry cough and breathlessness. Notable symptoms were vomiting with pain abdomen, diarrhea, hyperemic rash all over the body, petechial rashes, hepatomegaly, splenomegaly, altered sensorium with neck stiffness and seizures. Complete blood counts showed leukopenia, leukocytosis in cases while the rest had normal counts. [2] NS1 results shown in positive and weekly positive in both the samples in (Table 2 and 3.).The District Malaria office Bhopal has been investigated the samples as positive which can made help to diagnosis the dengue.

Table 2. Treatment History of Patients

S. No.	Symptoms	Duration	Investigation	Result
1.	Neck Rigidity	4-5 days	Hb	14.0
2.	Kern sign	4-5 days	TLC & DLC	21800
3.	Level of Consciousness	4-5 days	Platelet Count	65,000
4.	Lymph Adenopathy	4-5 days	Card Test	Positive
5.	Fever	4-5 days	NS1	Positive
6.	Headache	4-5 days	IgG	Weekly
7.	Rashes	4-5 days	IgM	Weakly
8.	Petechial	4-5 days	-	Positive
9	Shock	4-5 days	-	Positive
10.	Internal Bleeding	4-5 days	-	Positive

Table 3. Treatment History of Patients

S. No.	Symptoms	Duration	Investigation	Results
1.	Neck Rigidity	4-5 days	Hb	12.5 gm
2.	Kern sign	4-5 days	TLC & DLC	3800 µml
3.	Level of Consciousness	4-5 days	Platelet Count	65,000
4.	Lymph Adenopathy	4-5 days	Card Test	Positive
5.	Fever	4-5 days	NS1	Positive
6.	Headache	4-5 days	IgG	Positive
7.	Rashes	4-5 days	IgM	Positive
8.	Petechial	4-5 days	-	Positive
9	Shock	4-5 days	-	Positive
10.	Internal Bleeding	4-5 days	-	Positive

On the basis of these results, it may be hypothesized that there are large number of asymptomatic dengue infections in the community as compared to reported symptomatic cases in Bhopal. For the effective control of dengue transmission in such community like Madhya Pradesh where dengue epidemics have frequently been encountered, it is essential to ascertain the proportion of asymptomatic dengue infections which may act as a reservoir for dengue transmission, as well as threat for developing dengue haemorrhagic fever (DHF).[4]

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