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A Brief Description About Dengue Fever Awareness

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ABSTRACT

According to studies, dengue is the most widespread illness, endemic in over 100 countries. Data about its disease burden, including frequency, incidence, and geographic distribution, is essential for devising effective control strategies against DF. Therefore in our review we have conducted an overview about DF history, etiology, signs & symptoms, diagnosis and treatment to increase its awareness

Keywords: *DF, History, Etiology, Signs & Symptoms, Awareness*

1. INTRODUCTION

A viral infection transmitted by Aedes mosquitoes is known as dengue fever (DF), sometimes known as break-bone fever(BBF).[1] The occurrence is more common in areas that are tropical or subtropical.[1] Many people with dengue fever don't show any symptoms at all, according to research by the WHO.[1] Feelings of rash, nausea, body pains, headaches, and fever are among the most prevalent symptoms. It usually takes between 1 & 2 weeks for most people to feel better. It is necessary to admit certain dengue patients to the hospital due to the severity of their symptoms.[1] As of the year 2019, dengue infections were widespread in more than 120 countries.[1] In 2013, researchers found 60 million positive cases, with 18% of those infections resulting in hospital admissions.[2] The estimated cost of dengue cases worldwide is 9 billion dollars.[2] 12 Southeast Asian nations were expected to see around 3 million cases and 6000 deaths each year over the 2000s decade.[3] According to a study, DF has been reported in at least 22 African nations, although it is assumed to be widespread, with 12% of the population who are at risk.[4] The majority of illnesses are transmitted in urban areas.[1] Due to the growth of urban centers and other human settlements, its frequency has found to be increased in recent decades.[5] According to WHO, the illness is now endemic in more than a hundred nations.[5] While on the other hand, study have also concluded that, its worst-hit areas are Americas, Southeast Asia, and Western Pacific and almost 70% by Asia itself.[1] Although serologic evidence of DF is widespread in a number of African nations, the burden of dengue is still relatively underreported.[6]

HISTORY

The term "dengue" is derived from the Swahili expression ka-dinga pepo, which characterizes the illness as being attributed to a malevolent spirit. The Swahili term Dinga, signifying meticulous or cautious, is derived from the Spanish word dengue, which refers to the gait of an individual afflicted with dengue fever. In his 1789 report concerning the outbreak in Philadelphia, Benjamin Rush referred to the condition as breakbone fever. The term "bilious remitting fever" was utilized. The designation of DF emerged in the literature following the year 1828. In 1906, Aedes mosquitoes were identified as vectors for the transmission of dengue fever. The next year, researchers recognized dengue as the second virus-caused disease after yellow fever. Dengue hemorrhagic fever was initially documented in the Philippines in 1953, followed by reports in South America in 1981.[7]

ETIOLOGY

Study have shown that, DF is a single positive-stranded RNA virus. This virus is transmitted by mosquitoes and belongs to the Flaviviridae family (FV-F).[8,9] According to a study, these viruses are classified as arboviruses (arthropod-borne viruses) due to their primary transmission by arthropods, such as mosquitoes or parasites.[9] Additionally, it includes seven non-structural proteins (NS1, NS2a, NS2b, NS3, NS4a, NS4b, and NS5) that are essential for the process of replication. [10,11] The virions appear as a cluster of dark particles when examined under a transmission electron microscope. The predominant mode of transmission involves arthropods, including mosquitoes and ticks.[7]

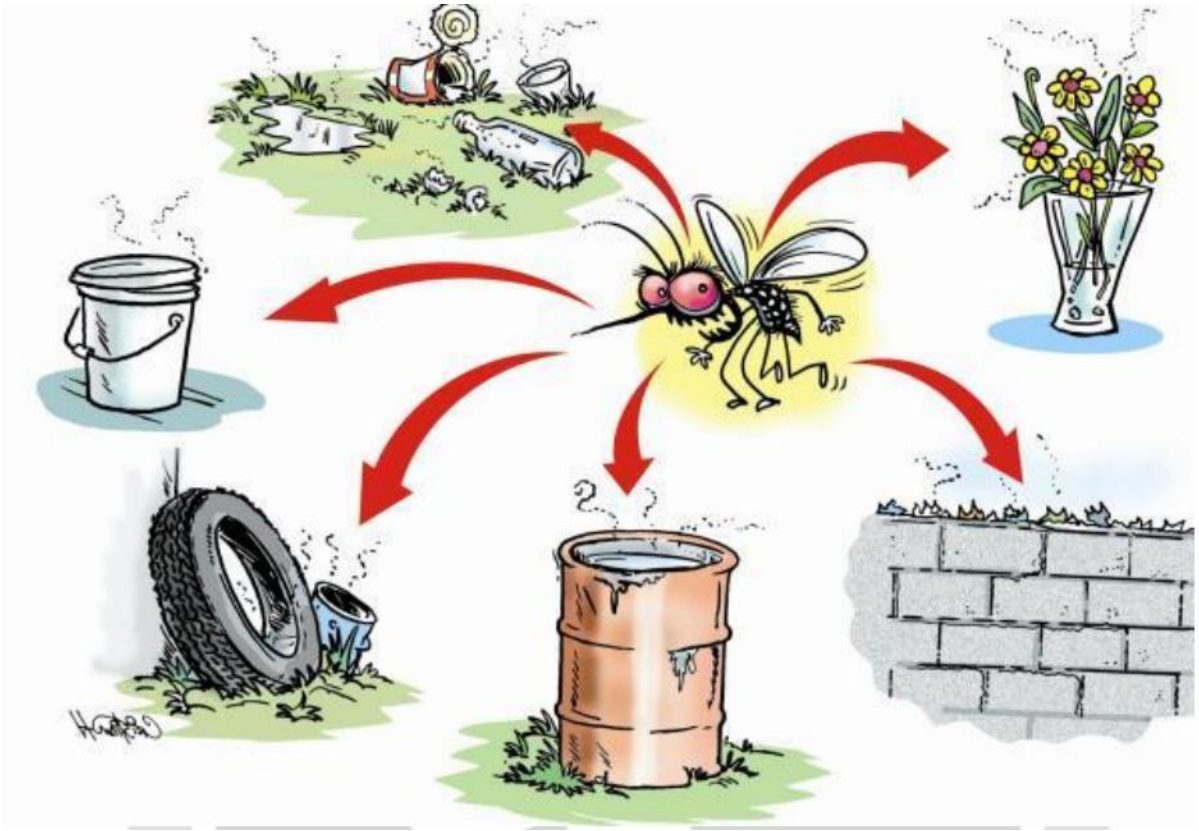

FIGURE 1: ETIOLOGY[7]

SIGNS & SYMPTOMS

Research indicated that a significant proportion of individuals infected with the DF (80%) are asymptomatic or present with only mild symptoms, such as a low-grade fever.[12] Approximately 5% of individuals infected with DF develop severe manifestations of the disease, with a minority of these cases posing a life-threatening risk.[12] The incubation period, according to study defined as the duration from exposure to the onset of symptoms, generally ranges from four to seven days; however, it may extend up to fourteen days.[13] Therefore, if symptoms manifest more than 14 days after returning from endemic areas, the likelihood of DF in those individuals is considered low.[14] Children frequently exhibit symptoms akin to the common cold and gastroenteritis, such as vomiting and diarrhea.[15] Initially, the symptoms are generally mild, often presenting as a high fever(HF).[11] The clinical manifestation of DF involves a HF (40˚C/104˚F), painful headache, eye discomfort, aches and pains in the muscles and joints, nausea, vomiting, swollen glands, and rash. According to a study by the WHO, severe DF symptoms include acute stomach pain, constant vomiting, rapid breathing, bleeding gums or nose,

weariness, restlessness, blood in vomit or stool, excessive thirst, pale and cool skin, and a weak feeling. These symptoms may emerge after the fever has passed. When people experience these severe symptoms, it is imperative that they seek the immediate assistance of a qualified medical expert. [1] Signs begin to manifest themselves after a typical incubation period of three to ten days. Clinical signs of dengue hemorrhagic fever and dengue shock syndrome may be mild or severe. It is hard to predict when mild symptoms will turn into severe dengue hemorrhagic fever or dengue shock syndrome because the symptoms can be vague and we don't fully understand how the disease works at a molecular level. Early warning signs of the disease are not always easy to discern. In DF, a fever of 40°C or above that lasts 2-7 days is considered DF by the WHO. Rash, nausea, vomiting, headache, and vomiting are common symptoms of DF. Although this disease affects people of all ages, epidemiological data shows that youngsters handle it better than adults. In mild cases of DF, laboratory assessment often reveals elevated leukocyte counts and a small elevation in hepatic aminotransferase activity.[7]

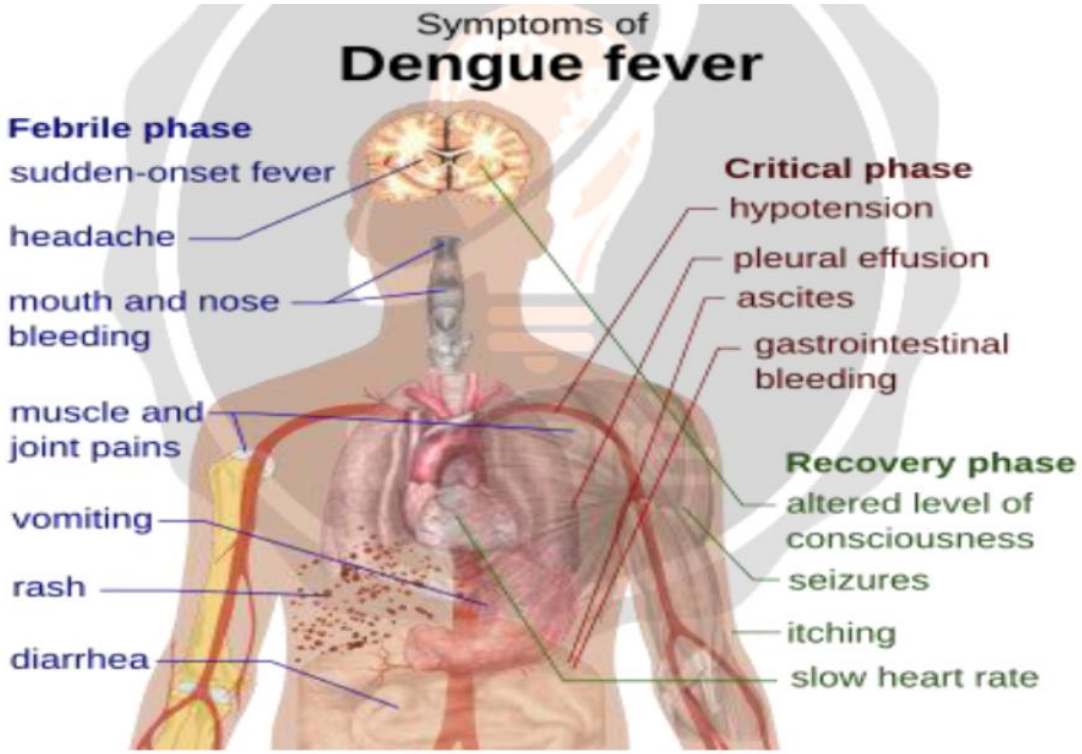

FIGURE 2: SYMPTOMS[7]

DIAGNOSIS

a. Physical Examination

In endemic regions, the diagnosis of dengue is frequently conducted through clinical assessment, relying on the symptoms reported by the patient and the findings from a physical examination.[12] The early presentation of illness may pose difficulties in differentiating it from other viral infections.[14] The presence of fever accompanied by nausea and vomiting, along with additional symptoms such as rash, generalized aches, a reduced WBC count, or any concerning signs in an individual residing in an endemic region, may indicate a probable diagnosis.[1]

b. Tourniquet Screening

The tourniquet test takes place by placing a blood pressure cuff at a pressure that lies between the diastolic and systolic values for a duration of 5 minutes. Following this, the presence of petechial hemorrhages is assessed; an increased count suggests a higher probability of dengue infection, with a threshold of more than 10 to 20 petechiae per square inch (6.25 cm^2) serving as a reference point.[1] Another study indicated that, based on the official diagnostic criteria for the condition, any individual presenting with a fever within 2 weeks of travel to tropical or subtropical regions should receive a diagnosis.[1] DF and chikungunya can present diagnostic challenges due to their overlapping symptomatology and geographical distribution, as both are viral infections that share a similar clinical profile.[16]

c. Blood Sample

In order to diagnose DF, a blood test is performed. In order to look for dengue virus signs, your healthcare provider will take

a sample of blood from a vein and send it to a lab. This may also make it possible to determine which of the four versions you own. A blood test might be used by your healthcare provider to look for other viruses that produce symptoms that are similar to those you are experiencing.[7]

FIGURE 3: TEST

d. Cell Culture, Nucleic Acid Identification, Polymerase Chain Reaction (PCR) and Serology

Microbiological laboratory screening can be utilized to validate DF.[1,17] This procedure is commonly executed through virus isolation in cell cultures, nucleic acid identification via PCR, detection of viral antigens (for instance, using NS1), or the identification of specific antibodies (serology).[1] Another study indicated that while virus isolation and nucleic acid detection offer higher accuracy compared to antigen detection, their application is less frequent due to the associated higher costs.[1] The sensitivity of NS1 detection during the febrile phase of a primary infection can surpass 90%, whereas it ranges from 60% to 80% in cases of secondary infection.[1] During the early phases of the illness, all test results may yield negative outcomes .[10] The polymerase chain reaction and viral antigen detection techniques can be utilized to yield precise results.[1] A PCR test utilizing equipment designed for influenza detection was introduced in 2012, potentially enhancing the accessibility of PCR-based diagnostic methods.[1] Acute illness is the only time when these laboratory tests, with the exception of serology, may be helpful for diagnosis. Tests for IgG and IgM antibodies specific to the dengue virus may assist in confirming it in the latter stages also. IgM is created after reinfection but is only identified at its highest levels (titers) after an initial infection. 30 to 90 days after an initial infection, IgM fades, but successive infections cause it to vanish rapidly. IgG can be found after 60 years and is a strong sign of past infection, even without symptoms. Between fourteen and twenty-one days after an initial infection, blood IgG levels increase. Titers typically increase in subsequent infections and peak early. The viral serotype infecting cells may be neutralized by both IgG and IgM.[1,16] Another study concluded that there may be cross-reactivity with other FV in tests for IgG & IgM antibodies. It is considered diagnostic when IgM is present in a patient experiencing symptoms.[1]

DIFFERENTIAL DIAGNOSIS [18]

1. Influenza
2. Enteroviral Infection
3. Measles
4. Rubella
5. Malaria
6. Leptospirosis
7. Typhoid Fever

TREATMENT

According to study, preserving a healthy viral fluid balance is important even though there are no specific antiviral medications for DF.[1] Patients who can imbibe, pass urine, have no "warning signals," and are generally healthy can be treated at home with regular monitoring and oral rehydration therapy.[1] But on the other hand, those who are unable to manage routine follow-up, exhibit "warning signs," or have additional health issues are those who require hospital treatment.[14] In a facility with access to an intensive care unit (ICU), patients who have chronic DF cases should receive care.[1] A rapid administration of 20 mL/kg is suitable for pediatric patients experiencing dengue shock.[19] Upon the stabilization of vital signs, normalization of hematocrit, and a urinary output of 0.5–1 mL/kg/h, the fluid delivery rate is modified.[14] During the recovery phase, it is essential to maintain adequate hydration by consuming a sufficient amount of fluids. Contact your healthcare provider immediately if you experience any of the following indicators of dehydration which are as follows:-[7]

1. Urine is decreased
2. Very less or no tears
3. Xerostomia or dry Lips
4. Lethargy / Confusion
5. Cold/ Clammy Extremities

A study proved that, the use of acetaminophen (such as Tylenol) help in reducing muscular pain & fever. But DF, comes to be positive in test reports physicians should not prescribe pain relievers such as aspirin, ibuprofen and naproxen sodium as these may raise the risk of DF related bleeding problems.[7]

FIGURE 4 : PREVENTION & TREATMENT FOR DENGUE[7]

2. CONCLUSION

In addition to assisting in the prevention of complications and fatalities, the guideline should be of use in the systematic management of cases at all levels. Accurate nursing care is of the utmost significance. When the platelet count is more than 10,000 per cubic millimeter, the majority of dengue patients do not need platelet transfusion, and there is no role for preventive platelet transfusion. There is a need for careful monitoring of areas with a high risk. It is crucial to keep an eye out for warning signs and, if necessary, to make a timely referral. Protocol-based fluid management is very crucial

REFERENCES

[1] Nyenke CU, Nnokam BA, Esiere RK, Nwalozie R. Dengue fever: etiology, diagnosis, prevention and treatment. Asian J Res Infect Dis. 2023;14(1):26-33.

[2] Shepard DS, Undurraga EA, Halasa YA, Stanaway JD. The global economic burden of dengue: a systematic analysis. The Lancet infectious diseases. 2016 Aug 1;16(8):935-41.

[3] Shepard DS, Undurraga EA, Halasa YA. Economic and disease burden of dengue in Southeast Asia. PLoS neglected tropical diseases. 2013 Feb 21;7(2):e2055.

[4] Yacoub S, Wills B. Predicting outcome from dengue. BMC medicine. 2014 Dec;12:1-0.

[5] Reiter P. Yellow fever and dengue: a threat to Europe?. Eurosurveillance. 2010 Mar 11;15(10).

[6] Otu AA, Udoh UA, Ita OI, Hicks JP, Egbe WO, Walley J. A cross-sectional survey on the seroprevalence of dengue fever in febrile patients attending health facilities in Cross River State, Nigeria. PLoS One. 2019 Apr 22;14(4):e0215143.

[7] Yesuratnam M, Lokesh Babu S, Jagan Mohan S, Venkat Rao K, Arun Kumar A, Anilkumar T. To Study On Etiology, Symptoms, Diagnosis ,Treatment and Therapeutic Outcome Of 'Dengue Fever. 2024.

[8] Rodenhuis-Zybert IA, Wilschut J, Smit JM. Dengue virus life cycle: viral and host factors modulating infectivity. Cellular and molecular life sciences. 2010 Aug;67:2773-86.

[9] Howard-Jones AR, Pham D, Sparks R, Maddocks S, Dwyer DE, Kok J, Basile K. Arthropod-borne flaviviruses in pregnancy. Microorganisms. 2023 Feb 8;11(2):433.

[10] Guzman MG, Halstead SB, Artsob H, Buchy P, Farrar J, Gubler DJ, Hunsperger E, Kroeger A, Margolis HS, Martínez E, Nathan MB. Dengue: a continuing global threat. Nature reviews microbiology. 2010 Dec;8(Suppl 12):S7-16.

[11] Normile D. Surprising new dengue virus throws a spanner in disease control efforts.2013.

[12] Whitehorn J, Farrar J. Dengue. British medical bulletin. 2010;95(1):161-73.

[13] Mahy BW, Van Regenmortel MH, editors. Desk encyclopedia of human and medical virology. Academic Press; 2010 May 21.

[14] Ranjit S, Kissoon N. Dengue hemorrhagic fever and shock syndromes. Pediatric critical care medicine. 2011 Jan 1;12(1):90-100.

[15] Varatharaj A. Encephalitis in the clinical spectrum of dengue infection. Neurology India. 2010 Jul 1;58(4):585-91.

[16] Chen LH, Wilson ME. Dengue and chikungunya infections in travelers. Current opinion in infectious diseases. 2010 Oct 1;23(5):438-44.

[17] Wiwanitkit V. Dengue fever: diagnosis and treatment. Expert review of anti-infective therapy. 2010 Jul 1;8(7):841-5.

[18] Srinivas V, Srinivas VR. Dengue fever: A review article. Indian J Med Res. 2011 Mar.

[19] De Caen AR, Berg MD, Chameides L, Gooden CK, Hickey RW, Scott HF, Sutton RM, Tijssen JA, Topjian A, Van der Jagt EW, Schexnayder SM. Part 12: pediatric advanced life support: 2015 American Heart Association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. Circulation. 2015 Nov 3;132(18_suppl_2):S526-42

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