



Review Article

AN EPIDEMIC RESURGENCE OF DENGUE IN INDIA: A CLOAKED MYSTERY

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ABSTRACT

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Dengue fever is one of the human viral mosquito-borne infectious diseases which is mainly occurring in tropical and subtropical areas (tropics are the region of the earth near to the equator). When an infected mosquito bites a person, the person gets infected with the virus and starts developing high fever, joint and muscle pain, headache etc. after 2 to 14 days and the sign and symptoms subsides itself after 2 to 7 days post clinical features developed. The cause of dengue fever is by a RNA virus which is single stranded that belongs to the family of flaviviridae and the genus is flavivirus. It is mostly endemic in tropical countries like India, china, Taiwan, Indonesia, Myanmar etc. due to heavy rainfall which increases the growth of mosquitoes and that can be controllable through proper scientific preventive measures of the disease. Transmission of dengue fever increases the burden of at least hundreds of dengue endemic countries where pediatric and geriatric aged group people are mostly affected due to their low immunity or the body is less resistant to dengue virus.

INTRODUCTION:

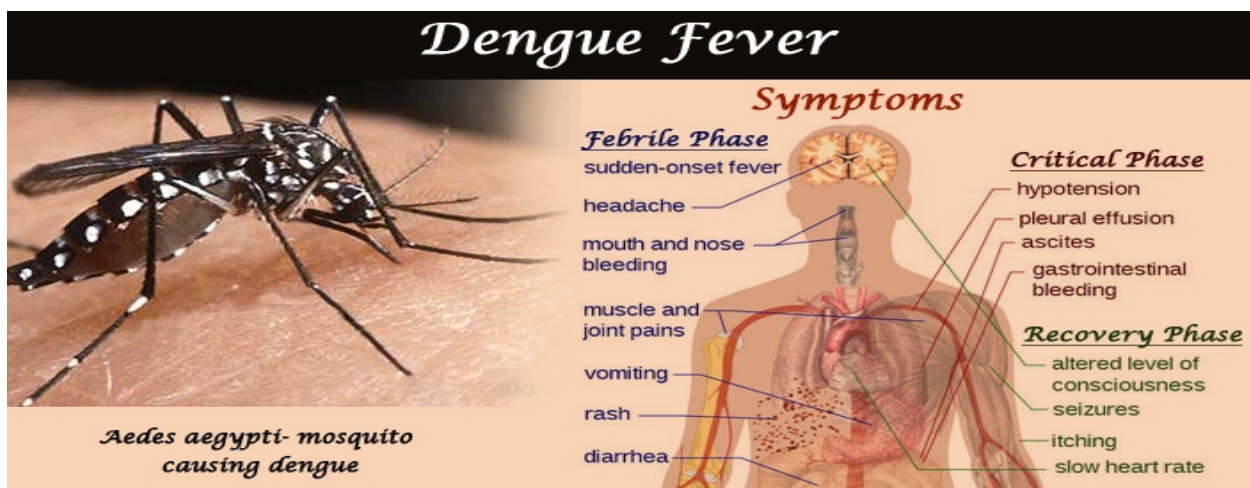
It has been observing that 40-50%(estimated value) of people of the earth are at the risk of developing dengue fever because nearly 50% of the world's population lives in an area where dengue is endemic. Almost 104 tropical countries comprise of 40% of total surface of the earth. The viruses transmit to any humans by only a single bite of an infected female *Aedes mosquito* and one distinct physical features can be seen on its body and legs, i.e. black and white strips. Hence it is also called as 'Tiger mosquito'. Most of the tropical region countries are developing countries where public health is mostly affected by economic status of the country. The poor economic condition of the country indirectly results poor hygiene, malnutrition, lack of education, lack of preventive measures of dengue which causes dengue more endemic in developing countries where children and old aged people are at particular risk.

In general cases dengue viruses produces mild to high degree of fever (as high as 105°F (40.5°C), myalgia (muscle pain), rash (A red and flat shaped rash may appear over most of the body parts), nausea, vomiting, mucosal bleeding, abdominal pain, some special cases patients develop severe form of dengue which includes DHF also known as dengue hemorrhagic fever and DSS (dengue shock syndrome). DHF usually occurs when the patient gets infected with Dengue for the

second time with different serotypes from the first serotype that the patient already got infected with. E.g. A person was infected with DENV1 before and now he is again infected with DENV2 has the height chance of developing DHF and DSS, which is considered very dangerous to the patients because it may eventually bring death to the person.(1)

GENETICS OF THE DISEASE:

Dengue has been considered one of the most important viruses which affects people around the world globally. It is believed that four serotypes of dengue virus evolved 1000 years ago. But now it has seen that dengue virus has recently evolved and became endemic among people in just few hundred years ago and become a one of the major problems of Public Health. Till now the main origin of dengue virus is still idiopathic but the phenotypic & genetic diversity is still found in the transmission cycle of primates. Some evidence has been found about dengue virus is that its viral strains is differ in key phenotypic features such as severity of the disease. In the process of newly shaping the dengue virus mainly stochastic process is responsible. For complete understanding of dengue virus evolution we need complete analysis of genome sequences and a lot of prospective studies in this field.(2)

PICTURE:

Source: <https://www.healthbanana.com/dengue-fever-symptoms-treatment-prevention/>



Source: <http://www.godrejhit.com/wp/articles/dengue-fever-in-newborn-babies/>

In this picture a red and flat shaped rash can be observed over most of the body parts of the baby.

DIAGNOSIS:

An appropriate early diagnosis is very important in proper dengue management because if a person gets infected with any of the dengue serotype among the four dengue virus serotypes may lead to severe form of the disease and ultimately it brings death to the person. A person can be affected with any of the four serotype of dengue virus. In general, it produces mild to high degree fever and can be turned out in to a catastrophe like dengue hemorrhagic fever and shock to the patient. In dengue virus diagnosis, the main target is to detect the virus and serological conversion, on the other hand in providing a differential diagnosis antibody cross—reactivity response has been considered a confound issue among the flavivirus. Even though science and technology for disease control has been evolving rapidly, till now there is no single definite diagnostic measures for dengue especially for those who has developed dengue infection for the second time. But some combined tests have the capability of detecting some signs that present during the various stages of dengue infection. The most simplified

test for dengue diagnosis is viral nonstructural protein 1 and immunoglobulin M. In diagnosis of dengue there are still many difficulties to be overcome and also need a wide prospective studies in the field of laboratory sciences to manage dengue.(3)

MOLECULAR ANALYSIS:

In recent years especially in the tropical countries it has been observed that the spread of dengue virus has been increasing rapidly. Because of its rapid evolution the dengue virus is becoming more dangerous for human around the world. To understand about the evolution and to keep observation on the transmission of the disease, identification of the genotype needs in a crucial manner. The most commonly used methods for phenotypic analysis of dengue virus is (E) gene with envelope. In this case to evaluate which gene will be suitable for dengue virus genotyping, phenotypic analysis plays an important role.(4)

MEDICATION:

Till now there is no specific preventive vaccines and antiviral treatment available for dengue fever because it is usually a self-limited illness. To fight against the virus of dengue and

for advancement of the vaccine, it is very important to have a brief knowledge on dengue

virus, how its lifecycle continues is extremely important.

S.No.	Generic Name	Brand Name	FDA Approved	Mechanism
1	NSAIDs(Ibuprofen)	Advil	NDA#20-944	Synthesis of prostaglandins
2	Acetaminophen	Paracetamol	NDA#022450	Synthesis of prostaglandins
3	ORS Fluid	ORS Sachets	NDA 22-318	Not depend on absorption

The above medications are just for symptomatic treatment of the disease, treatment varies patient to patient depending upon the severity of the condition.

DISCUSSION:

Till now there is no such specific remedy and vaccination against for the virus. The main objective is to give symptomatic treatment to the patient. Prevention and retard of dengue virus transmission should be mainly based on three objectives-

- a) To control dengue transmission, there should be some dengue awareness program among people by health worker.
- b) It is believed that children and old aged people especially who have been living along the rural riverside are considered more sensible to dengue.
- c) Some retrospective study and responsibility should be taken for controlling the dengue vector.

Due to the poor climatic factor as well as lack of community participation has recognized as one of the key barriers in preventing the disease transmission. People should also be aware about the highest biting intensity of aedes mosquito i.e.; at dusk and dawn. To achieve those points health workers as well as government should be more responsible for the control of dengue and also have to have the faith in the field of preventive practices.(5)

CONCLUSION:

Prevention and future control of dengue amongst healthcare person, geriatric and pediatric aged group is very important because these group people are at high risk of developing dengue due to high exposure and lack of immunity. Even though dengue can't

be eliminated or prevent by an action of single individual, with the help of community participation and some scientific preventive measures dengue can be preventable in to some extent. In dengue endemic regions social responsibility of the community plays an important role in prevent the disease transmission.

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