DENGUE AN ESCALATING PROBLEM

During the last 50 yrs, a large number of physicians have become familiar with dengue virus (DV) and have managed patients with Dengue fever (DF) in India. The WHO 2009 classification divides dengue fever into two groups: Uncomplicated and severe. However, the 1997 WHO classification is widely used—i.e. DF, Dengue hemorrhagic fever (DHF) and Dengue shock syndrome (DSS). Four main manifestations are continuous fever for 2-7 days, hemorrhagic tendency, thrombocytopenia and evidence of plasma leakage. These clinical features are well known to us. Many atypical clinical presentations of dengue infection involving various organs are also reported.

The cumulative dengue disease burden has attained an unprecedented proportion in the recent decade with a sizable human population at risk. WHO currently estimates, there may be 50-100 million dengue infections worldwide every year. About half of the world population living in endemic areas is now at risk. The incidence of dengue has increased 30 fold between 1960 and 2010. Increasing in magnitude and epidemic after epidemic, as a tropical disease dengue has deemed second in importance to malaria in 1998. The increase is due to combination of urbanization, population growth, increased international travel, and global warming.

The virus has four sero-types (DV-1, DV-2, DV-3, and DV-4.), that spread by the bites of infected Aedes aegypti and other species A albopictus mosquitoes. They live in urban habitat, mostly in man-made containers like used tires (a breeding habitat). Unlike other mosquitoes they are day time feeders. Aedes albopictus the secondary vector in Asia, is now spreading to North America and Europe largely due to international trade. A recent outbreak of dengue was noticed on Madeira Islands in Portugal (2012) and in five other European countries. A albopictus is highly adaptive and therefore can survive in cooler temperate regions. Recovery from infection of one sero type provides life long immunity against that sero-type. However, cross immunity is only partial and temporary. Subsequent infections by other sero types increase the risk of developing severe dengue.

Diagnosis of DV infection is today routinely done by demonstration of NS-1 antigen or DV IgM, IgG antibodies in patient’s serum, depending upon day of illness, using ELISA kits. Viral antigen detection is more accurate in the first seven days. IgM and IgG are produced after 5-7 days. IgM becomes undetectable 30-60 days after primary infection. IgG, by contrast, can remain detectable for over 60 days and is useful in diagnosis in the later stage of disease. Demonstration of virus by polymerase chain reaction is also available.

In India, the first epidemic of dengue like illness occurred in Madras, in 1780. First dengue virus was isolated in Japan in 1943 followed by Calcutta in 1944. The first virologically proved epidemic of dengue fever occurred in Calcutta in 1963-64. In recent years, transmission has increased predominantly in urban and semi urban areas. The first major epidemic occurred in Philippines and was followed by quick global spread, but was absent in India for unknown reasons. DHF started simmering in various parts of India since 1996. The first major wide spread epidemic of DHF/ DSS occurred involving areas around Delhi and Lucknow in 1996, and extended all over the country.

There is no specific treatment. Medical care by physicians and nurses experienced with the effects and progression of the disease can save lives. At present, the only method to control or prevent the transmission is to combat vector mosquitoes by effective means and public education. Dengue vaccines have been under development since 1940’s but a tetravalent vaccine which provides simultaneous long term protection is round the corner.¹

Reference


Contributed by
JV Pai-Dhungat*, Falguni Parikh**
*Professor of Medicine, T.N. Medical College (Retd.), Hon. Physician, Bhatia Hospital, Mumbai; **Consultant Internal Medicine and Infectious Diseases, Kokilaben Dhirubhai Ambani Hospital, Andheri (West), Mumbai