Dengue is the most common arthropod-borne viral illness in humans. A lot of supportive care and treatment is delivered by the team of experts can go a long way to save a patient suffering from dengue fever.

Dengue Fever (DF) is an acute viral infection with potential fatal complications. DF was first referred as “water poison” associated with flying insects in a Chinese medical encyclopedia in 992 from the Jin Dynasty (265-420 AD). The first clinically recognized dengue epidemics occurred almost simultaneously in Asia, Africa, and North America in the 1780s.

DF also known as break bone fever is the most common arthropod-borne viral (Arboviral) illness in humans, fast emerging pandemic-prone viral disease in many parts of India which flourishes in urban poor as well as affluent areas, suburbs, countryside on account of deficient water management, presence of non-degradable tyres and long-lasting plastic containers as well as increasing urban agglomerations and inability of the public health community to mobilize the population to respond to the need to eliminate mosquito breeding sites. Overhead tanks, ground water storage tanks and septic tanks are usually the primary habitats. Aedes aegypti (Ae aegypti) is the main vector species that breeds almost entirely in man made water receptacles found in and around households, construction sites, factories. It is caused by infection with 1 of the 4 serotypes of dengue virus (Flavivirus) designated as DEN-1, DEN-2, DEN-3 and DEN-4. Infection with one dengue serotype confers lifelong immunity to that serotype but a person can eventually be infected by all 4 serotypes.

There are 3 main clinical subsets of dengue infection. Nonspecific febrile illness, classic dengue and dengue hemorrhagic fever (DHF)/dengue shock syndrome (DSS). Classic dengue is a self-limiting acute disease characterized by fever (40°C / 104°F), severe headache, myalgias and may be associated lymphadenopathy, pharyngitis and ocular congestion and respiratory or GI symptoms. The fever lasts for 4-5 days and patient can develop a maculopapular rash that may be pruritic and lasts 2-3 days. Symptoms usually last for 2-7 days, after an incubation period of 4-10 days after the bite from an infected mosquito. Some infections result in DHF and DSS that are potentially deadly complication occur due to increased capillary permeability and vasodilatation 3-7 days after start of illness. The capillary leak explains the rise in the hematocrit, periorbital edema, pleural effusions and ascites. The warning signs to look out for occur 3-7 days after the first symptoms in conjunction with a decrease in temperature (below 38°C / 100°F) include: severe abdominal pain, persistent vomiting, rapid breathing, bleeding gums, blood in vomit, fatigue and restlessness. The next 24-48 hours of the critical stage can be lethal; proper medical care is needed to avoid complications and risk of death. Primary or first infection in non immune persons usually causes DF. Subsequent dengue infection by different serotype causes more severe illness like DHF/DSS.
Diagnosis of DF is routinely done by demonstration of anti-DV IgM antibodies or by NS-1 antigen in patients’ serum depending upon day of illness using ELISA kits (prepared by National Institute of Virology, Pune). Molecular methods (reverse transcriptase PCR) are being increasingly used in diagnosis of DF. Additionally, the detection of NS-1 in malaria is negative in the early stages of the disease. Detection of NS-1 is more accurate in the first seven days and DV specific antibodies. types IgG and IgM, can be useful in confirming a diagnosis in the later stages of the infection. Both IgG and IgM are produced after 5-7 days. In a person with symptoms, the detection of IgM is considered diagnostic. Directorate of National Vector Borne Diseases Control Programme (NVBDCP) is currently following IgM Antibody Capture ELISA (MAC-ELISA) for diagnosis of dengue infection. A number of commercial Diagnostic Test Kits (DHTKs) for anti- dengue IgM and IgG antibodies are present commercially available, which produces the results within 15 to 20 minutes. However, the sensitivity/specificity of most of these tests is not known since they have not yet been properly validated. The tourniquet test is performed by inflating a blood pressure cuff to a mid point between the systolic and diastolic pressure for five minutes. The test is considered positive when 19 or more petechiae per 2.5 cm² are observed. In DHF, the test usually gives a definite positive test with 20 petechiae or more. The test may be negative or only mildly positive during the phase of profound shock (DSS).

Clinically DF can be diagnosed as an acute febrile illness of 2-7 days duration with presentation of two or more of the manifestations like headache, retro-orbital pain, myalgia, arthralgia, rash, haemorrhagic manifestations. Criteria for diagnosis of DHF include a positive or confirmed case of DF plus haemorrhagic manifestation at least one positive tourniquet test, petechiae, ecchymoses or purpura, bleeding from mucosa, GT, injection sites or other sites, haematemesis or melaena. Plus thrombocytopenia (<100,000 cells per mm³) plus evidence of plasma leakage due to increased vascular permeability (haematuria > 20%, pleural effusion, ascites, hypoproteinaemia). The diagnosis of DSS includes criteria for DHS along with clinical manifestations of failure to maintain normal metabolic parameters: hypotension is associated with fever, cold and clammy skin and restlessness.

DF is usually a self-limited illness and no specific antiviral treatment is currently available. However, the guidelines for Treatment of DHF by WHO in hospitals. Supportive care with analgesics, fluid replacement, and bed rest is usually sufficient. Acetaminophen may be used to relieve fever and reduce other symptoms. Aspirin, nonsteroidal anti-inflammatory drugs (NSAIDs), and corticosteroids should be avoided. Management of severe DF requires careful attention to fluid management and proactive treatment of hemorrhage. Management of DHF (Fibrile Phase) is similar to that of DF. Captopril amount of fluid should be given orally and ORS is preferable to plain water. IV fluid may be administered if the patient is vomiting persistently or refusing to feed. Any person who has DF with thrombocytopenia and haemoconcentration and presents with abdominal pain, black tarry stools, epistaxis, bleeding from the gums and infection etc needs to be hospitalized. All these patients should be observed for signs of shock and treated in specialized hospital care. Most misconceptions are prevalent in relation to platelet count and its management. In general there is no need to give prophylactic platelets even at <20,000/mm³. Prophylactic platelet transfusion may be given at level of <10,000/mm³ in absence of bleeding manifestations. There are no approved vaccines for the dengue virus. Prevention thus depends on control and protection from the bites of the mosquito that transmits it. Proper solid waste disposal and improved water storage practices, including covering containers to prevent access by egg laying female mosquitoes are among methods that are encouraged through community-based programmes.

**MALARIA**

**Prevention of malaria involves protecting yourself against mosquito bites and taking antimalarial medicines**

Malaria imposes great socio-economic burden on humanity and with six other diseases like diarrhoea, HIV/AIDS, tuberculosis, malnutrition, measles, hepatitis B and pneumonia account for 83% of Global infectious disease burden. About 36% of the world population, i.e. 2020 million is exposed to the risk of contracting malaria in ~ 90 countries. In the south-east Asian Region of WHO, from the 1.4 billion people living in 11 countries, 1.2 billion are exposed to the risk of malaria and most of whom live in India. However, the south-east Asia contributed only 2.5 million cases to the global burden of malaria. Of this, India alone contributed 76% of the total cases. Taking into account clinical episodes, it has now been estimated that P. falciparum exists outside Africa, especially in south-east Asia and other regions. Transmission from infected mother to fetus has also been reported. It can also be transmitted by blood transfusion, needle stick injury, sharing of needles by infected injection drug users, or organ transplantation.

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Fever is the cardinal symptom of malaria. It can be intermittent with or without periodicity or continuous. Many cases have chills and rigors. The fever is often accompanied by headache, myalgia, arthralgia, anorexia, nausea and vomiting. The symptoms of malaria can be non-specific and mimic other diseases like viral infections, enteric fever etc. Malaria should be suspected in patients residing in endemic areas and presenting with above symptoms. It should also be suspected in those patients who have recently visited an endemic area. All clinically suspected malaria cases should be investigated immediately by microscopy and or Rapid Diagnostic Test (RDT).

Nearly 1.5 million confirmed cases of Malaria are reported annually by NVBDCP of which 50% are due to P. falciparum (PF). Chloroquine-resistant PF cases have been reported from thousands of places in India and the world. The continuing use of CO has been considered to be responsible for decreasing proportion of PF cases. Prompt and effective treatment of uncomplicated PF cases will prevent cases from deterioration to severe and death. Chloroquine is the drug of choice of Plasmodium vivax (PV) cases and Artemisinin Combination Therapy (ACT) is the drug of choice for all confirmed cases of uncomplicated PF cases followed by single dose of Primaquine (0.75mg/kg) on Day 2. Oral Artesunate(AST) monotherapy is banned in India. Severe PF cases should be promptly given artemisinin derivatives or quinine to prevent death. Intra muscular preparations are preferred. Treatment of severe PV or mixed malarial infection (PF & PV both) should be treated as severe PV malaria cases. PF cases during pregnancy in the first trimester should be treated with single dose of Primaquine (0.75mg/kg) on Day 2. Artemisinin derivatives are not recommended during pregnancy in the first trimester. The use of chloroquine derivatives can be given to save life of the mother. In second and third trimester maternal artemisinin derivatives AS is the drug of choice. PV has a relapse rate of around 30% which can be prevented by adding Primaquine to all patients of PV malaria (except G6PD deficient, infants and pregnant women) for 14 days.

The promotion and use of insecticide-treated mosquito nets has become a leading strategy in malaria prevention and control. Improved housing construction to prevent mosquito entry (e.g., window screens) also provide protection against mosquito bite. Mosquito coils and body repellents (sprays and lotions) are often used for individual protection but they are not effective for general use as a control measure and are relatively expensive. Wearing long protective clothing while outdoors specially at night is also advisable. Source reduction of insecticides and destruction of the breeding sites. Early detection and treatment through training of health workers and community awareness remain important strategy in reducing the disease burden.
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