MAX HEALTHCARE
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Care Plus

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Department of Internal Medicines

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DENGUE FEVER
STOP IT NOW BEFORE IT KILLS

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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, pharyngeal and ocular congestion and respiratory or GI symptoms. The fever lasts for 4-5days and patient can develop a maculopapular rash that may be pruritic and lasts 2-3days. 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 DV infection.All tests may be negative in the early stages of the disease. Detection of NS1 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 Rapid Diagnostic Test (RDT) kits for anti-dengue IgM and IgG antibodies are at 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 10 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 probable or confirmed case of DF plus haemorrhagic manifestation at least one (positive tourniquet test, petechiae, ecchymoses or purpura, bleeding from mucosa, GIT, injection sites or other sites, haematemesis or malena) Plus thrombocytopenia (<100,000 cells per cumm) plus evidence of plasma leakage due to increased vascular permeability (haematocrit > 20%, pleural effusion, ascities, hypoproteinaemia). The diagnosis of DSS include criteria for DHS along evidence of circulatory failure manifested by rapid and weak pulse and narrow pulse pressure (<20 mm Hg) or hypotension for age, cold and clammy skin and restlessness.

DF is usually a self-limited illness and no specific antiviral treatment is currently available. WHO has provided the publication Guidelines for Treatment of DF/DHF in hospitals. Supportive care with analgesics, fluid replacement, and bed rest is usually sufficient. Acetaminophen may be used to treat fever and relieve 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 (Febrile Phase) is similar to that of DF. Copious 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 replacement. In general there is no need to give prophylactic platelets even at < 20,000/ cumm. Prophylactic platelet transfusion may be given at level of <10,000/ cumm in absence of bleeding manifestations. There are no approved vaccines for the dengue virus. Prevention thus depends on control of 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.

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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, measles, hepatitis B and pneumonia account for 85% 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, out of about 1.4 billion people living in 11 countries , 1.2 billion are exposed to the risk of malaria and most ofwhom live in India . However, the southeast 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 estimates outside Africa, especially in south-east Asia are 200% higher than that reported by the WHO. In addition to this, burden of P. vivax malaria in the world has been calculated at 71–80 million cases of which south-east Asia and western pacific countries contributed 42 million cases.

Malaria is one of the major public health diseases of India. Even a century after the discovery of malaria transmission through mosquitoes in India by Sir, Ronald Ross in 1897, malaria continues to be one of India's leading pubic health problems. In the 1930s, a treatise written by Sinton (1935) on 'what malaria costs India' recorded that the problem of the very existence in many parts of India was in fact the problem of malaria. In those days, it constituted one of the most important causes of economic misfortune, engendering poverty which lowered the physical and intellectual standards of the nation and hampered prosperity and economic progress in every way.

The annual parasite incidence (API) is a malariometric index to express malaria cases per thousand population. As per the National Vector Borne Disease Control Program (NVBDCP) incidence records, in most parts of of India the API was <2, whereas 2–5 API was in scattered regions, while regions with >5 API were scattered in the states like Rajasthan, Gujarat, Karnataka, Goa, southern Madhya Pradesh, Chhattisgarh, Jharkhand and Orissa, and in the northeastern states. The proportion of P. vivax and P. falciparum varies in different parts of India. Although most of the indo-gangetic plains and northern hilly states, northwestern India and southern Tamil Nadu state have <10% P. falciparum and the rest are P. vivax infections; in the forested areas inhabited by ethnic tribes, the situation is reverse and P. falciparum proportion is 30–90% and in the remaining areas it is between 10 and 30%. In India, maximum malaria is contributed by the Orissa state. Although Orissa has a population of 36.7 million (3.5%), it contributed 25% of total 1.5 to 2 million reported annual malaria incidence, 39.5% of P. falciparum malaria and 30% of deaths due to malaria in India. Similarly, in the other states inhabited by ethnic tribes mainly in the forest ecosystems, meso- to hyper-endemic conditions of malaria exist with the preponderance of P. falciparum to the extent of 90% or even more.

Most of the point prevalence studies in India have been carried out for outbreak/epidemic investigations. There is very limited information on age and gender specific seasonal prevalence of malaria in different paradigms in the country. The burden is generally higher in males than females in all age groups. These studies showed that children in the states like Assam, Arunachal Pradesh and Rajasthan had higher incidence of malaria than adults, whereas in the indo-gangetic plains the situation was reverse.

Malaria parasite belongs to the genus Plasmodium. Five species of this protozoa cause nearly all malarial infections in human. Plasmodium vivax(PV) is the commonest (60-70%) followed by P falciparum(PF) (30-45%), P malariae species is rarely found and P ovale is not found in India.

Malaria is transmitted by the bite of infected female Anopheles mosquitoes. Malaria mosquito breeding grounds include fresh water or salt-water, vegetative or non-vegetative, shady or sunlit areas. Ground pools, small streams, irrigated lands, freshwater marshes, forest pools, and any other place with clean, slow-moving water are all considered prime breeding grouds for mosquitoes.

It can also be transmitted by blood transfusion, needle stick injury, sharing of needles by infected injection drug users, or organ transplantation. Transmission from infected mother to fetus has also been reported.

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(CQ) resistant PF cases have been reported from various places of India and the world. The continuing use of CQ has been considered to be responsible for increasing proportion of PF cases. Prompt and effective treatment of uncomplicated PF cases will prevent cases from deterioration to severe cases 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(AS) monotherapy is banned in India. Severe PF cases should be promptly given artemisinin derivatives or quinine to prevent death. Intravenous preperations are preferred. Treatment of severe PV or mixed malarial infection (PF & PV both) should be treated as severe PF malaria cases. PF cases during pregnancy in first trimester should be treated with parentral quinine. If it is not available, parentral artemisinin derivatives can be given to save life of the mother. In second and third trimester parentral 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 can be done with spraying 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.

Complete Health Care facility available for Dengue & Malaria at Max Super Speciality Hospital, Bathinda & other units. These are as follow:

- Fully equipped Blood Bank with all facilities.
- Automaled Blood Components separation by TACE-II
- Platelet seperation by Apheresis- Single donor platelet Concentrate.
- Availability of Random Donor Platelet Concentrate.
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