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Retrospective study of Clinical Presentations of Dengue Fever in Infants and Children at Tertiary care hospital

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ABSTRACT:-BACKGROUND:-Dengue is a viral infection caused by an arbovirus of the Flaviviridae family. Epidemics frequently occur in tropical and subtropical countries, and it is a grave public health problem. It may present in many forms. The most common classical form of dengue causes fever, myalgias, headache, nausea, vomiting, diarrhea, arthralgia, and rash lasting for a week. Dengue hemorrhagic fever is a severe form of the disease that can progress to severe hemorrhagic manifestations, hypovolemic shock, and death[1].
CASE SERIES: - We report four cases admitted between October 2020 to November 2020 at tertiary care hospital. The blood sample was positive for IgM antibody of dengue, laboratory parameters showed normal liver enzymes and normal blood sugar, electrolytes, except for potassium on higher side and kidney function tests normal. Serologic testing for malaria, typhoid, HIV, and syphilis were negative. DENV IgM ELISA assays are a common laboratory diagnostic test used by clinicians during acute febrile illnesses in infants. We found that DENV IgM levels were likely to remain below a well-established positive threshold within the first 5 days of illness in primary DENV-infected infants. Positive DENV IgM values were generally seen between 5 and 30 days after illness onset.[2]
CONCLUSION: -Dengue fever even though can have serious ill effects on infants and children, can be easily treated by proper fluid management.

I. PATHOPHYSIOLOGY OF DENGUE INFECTION

Primary infection -The bite of the mosquito inoculates the virions into the skin, which go on to infect the dendritic cells (macrophages in the skin). The virions are transported through the lymphatic system into the draining lymph nodes and then into the bloodstream. The resulting viremia initiates a host immune response (both adaptive and innate immune response including production of interferons) which ultimately results in clearance of the viruses from the bloodstream. The liver is particularly involved in dengue virus infection. High liver enzymes may be seen in an infection though severe hepatic failure is rare.Severe dengue with hemorrhagic symptoms and shock is seen in about 5% of primary infections. There are two main pathophysiological features in Severe dengue. 1. Increased vascular permeability that leads to plasma leak. This loss of plasma manifests as signs and symptoms of shock and fluid accumulation (edema, pleural effusion, ascites, etc.) 2. Disorders of hemostasis – thrombocytopenia, coagulopathy, and vascular changes which manifest as hemorrhage

Secondary infection- Primary infection with one of the four serotypes of dengue virus generally provides long-lasting immunity to subsequent infection by a virus of the same serotype. Despite some cross-immunity, there is a higher risk of developing Severe dengue in a secondary infection by a virus of another serotype. This is because the pathophysiology in this case is quite different from that of a primary infection. The antibodies developed during a primary infection combine with the virions (of another serotype) and form an antibody–virus complex. This complex enhances the infectivity of the virus and enables it to enter cellular compartments better. There are also a diminished antiviral immune response, an increased production of cytokines, and complement activation. The secondary infection ultimately results in an enhanced pro-inflammatory response, higher viral titers, increased vascular permeability and coagulopathy. The last two in the list – enhanced vascular permeability (which causes leakage of plasma from capillaries into the extravascular space) and coagulopathy are responsible for the higher incidence of SD illness

II. CLINICAL MANIFESTATIONS:-

Dengue is a severe, flu-like illness that affects infants, young children and adults, but seldom causes death. Symptoms usually last for 2–7 days,

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after an incubation period of 4–10 days after the bite from an infected mosquito. The World Health Organization classifies dengue into 2 major categories: dengue (with /without warning signs) and severe dengue. The sub-classification of dengue with or without warning signs is designed to help health practitioners triage patients for hospital admission, ensuring close observation, and to minimize the risk of developing the more severe dengue.

Dengue-Dengue should be suspected when a high fever (40°C/104°F) is accompanied by 2 of the following symptoms during the febrile phase-severe headache, pain behind the eyes, muscle and joint pains, nausea, vomiting, swollen glands, rash.

Severe dengue-A patient enters what is called the critical phase normally about 3-7 days after illness onset. It is at this time, when the fever is dropping (below 38°C/100°F) in the patient, that warning signs associated with severe dengue can manifest. Severe dengue is a potentially fatal complication, due to plasma leaking, fluid accumulation, respiratory distress, severe bleeding, or organ impairment.

Warning signs -severe abdominal pain, persistent vomiting, rapid breathing, bleeding gums, fatigue, restlessness, blood in vomit. If patients manifest these symptoms during the critical phase, close observation for the next 24–48 hours is essential so that proper medical care can be provided, to avoid complications and risk of death[4]

DIFFERENTIAL DIAGNOSIS: Infectious mononucleosis, Chikungunya viral infections, Coxsackie and other enteroviral infections, Rickettsial infections, Rubella, Parvovirus B19 infections, Leptospirosis, Influenza[5].

III. CASE SERIES

CASE1: -Dengue with Thalassemia-A male child of 1.5 year of age from Sangamner known case of thalassemia presented with fever, coryza, malena, vomiting and loss of appetite. On admission child had cold extremities, thready pulses, hypotension and laboratory tests showed dengue IgM+ve and has been diagnosed as dengue shock syndrome and treated by fluid management. Child was transfused once due to decrease in hemoglobin. Urine output improved and vitals stabilized and child was discharged after hospital stay of 10 days.

CASE2: -Dengue with Seizure-A one-month old male child presented with status epilepticus and seizure controlled by multiple antiepileptics and finally controlled upon giving magnesium sulphate. Continuous cry was present and meningitis was ruled out. Routine tests have been done and the child has been diagnosed having Dengue IgM+ve and treated accordingly and child was discharged after hospital stay of 12 days.

CASE3:-Dengue with Hematemesis-A female child of 18 month old presented with blood in vomitus and increased work of breathing and was ventilated for 2 days and diagnosed as Dengue IgM+ve Hemorrhagic Shock and treated by volume expanders and recovery seen child extubated. Bleeding has been controlled, antibiotics given (ceftriaxone and gentamycin). Managed well and discharged on breast feed after hospital stay of 8 days.

CASE4: -Dengue with Anemia-one-year old female children presented with fever, cold and cough. Known case of imperforate anus had hemoglobin of 5gm/dl on admission. Child has been transfused and managed with fluids and improved in general condition and discharged after 12 days.

IV. DISCUSSION:

Dengue is an important arboviral infection in tropical countries. Global incidence of dengue fever has increased dramatically in the recent decades. There are very few studies based on the revised new dengue classification.In our study fever was present in all cases. Coryza, vomiting, malena, and abdominal distension were seen commonly. Bleeding in dengue is multifactorial. The most common bleeding manifestations in both severe and non-severe dengue were petechiae, purpura, and ecchymosis. Gastrointestinal bleeding was significantly seen in other Indian studies. Hematemesis was the most common bleeding manifestation reported in some studies. Convulsion due to infection is very rare. There was no correlation between platelet counts and bleeding manifestations in our study.[6]

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