KEY:

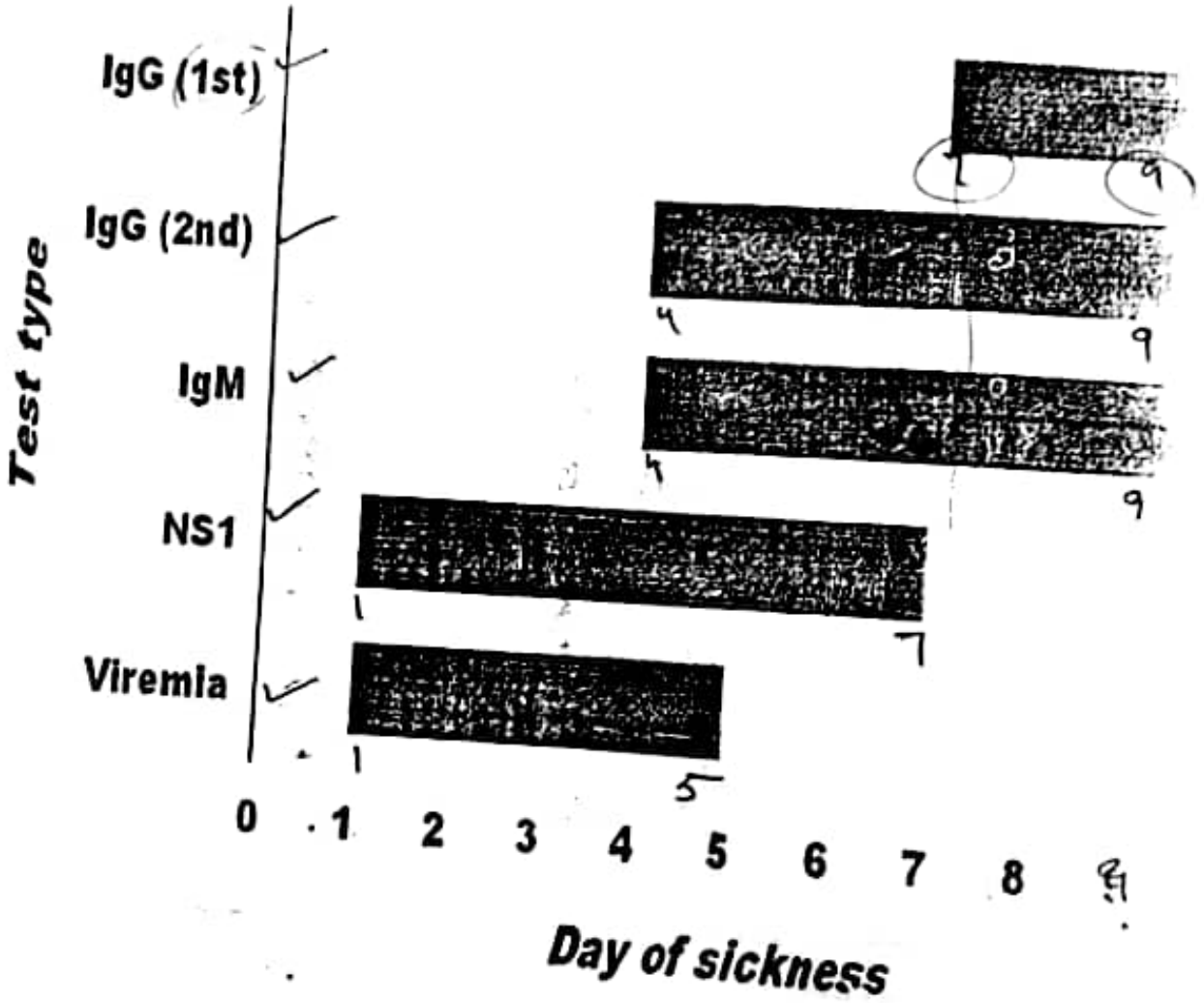
a. Dengue virus causing dengue hemorrhagic fever.
b. (Aedes aegypti mosquito) female
c. **Clinical Spectrum:** Dengue hemorrhagic fever is a much more severe disease, with a fatality rate that approaches 10%. The initial picture is the same as classic dengue, but then shock and hemorrhage, especially into the gastrointestinal tract and skin, develop. Dengue hemorrhagic fever occurs particularly in southern Asia, whereas the classic form is found in tropical areas worldwide.

Pathogenesis: Hemorrhagic shock syndrome is due to the production of large amounts of cross-reacting antibody at the time of a second dengue infection. The pathogenesis is as follows: The patient recovers from classic dengue caused by one of the four serotypes, and antibody against that serotype is produced. When the patient is infected with another serotype of dengue virus, an anamnestic, heterotypic response occurs, and large amounts of cross-reacting antibody to the first serotype are produced. There are two hypotheses about what happens next. One is that immune complexes composed of virus and antibody are formed that activate complement, causing increased vascular permeability and thrombocytopenia. The other is that the antibodies increase the entry of virus into monocytes and macrophages with the consequent liberation of a large amount of cytokines.

Hypothesis → ① immune Complex (Virus + antibody) → activate the complement → ↑ Vascular permeability + Thrombocytopenia

② Antibodies ↑ the entry of virus into Monocytes + Macrophages → libration of cytokines.

When tests become positive



RNA enveloped.

Dengue virus SGD

A young male suddenly developed influenza like syndrome (break bone fever) characterized by fever, malaise, retro-orbital pain, myalgias and arthralgias, associated with facial flushing and macula-papular. A Flavivirus was found out to be the cause of the disease. enlarged lymph nodes

a) Name the causative agent and the disease. Dengue Hemorhagic fever
b) Name the vector of this virus. Aedes aegypti mosquito.
c) Describe pathogenesis and the clinical spectrum of infection by this virus?
d) How will you confirm diagnosis in laboratory?

Dengue Markers

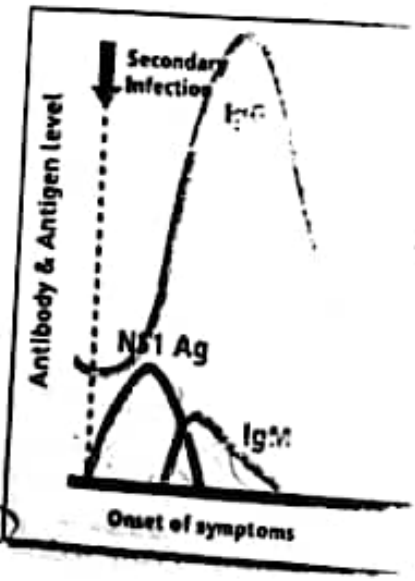
Response to Secondary Infection

1. NS1 antigens

Day 1 after onset of fever and up to Day 9.
Not detectable once anti-NS1 IgG antibodies are produced
Appeared in short period

2. IgM antibodies

Produced at low or undetectable levels or
for a shorter period than in a primary infection.



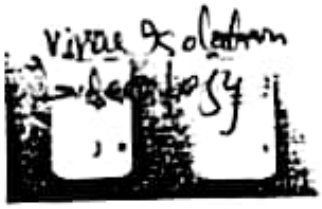
3. IgG antibodies

Rising rapidly 1-2 days after onset of symptoms

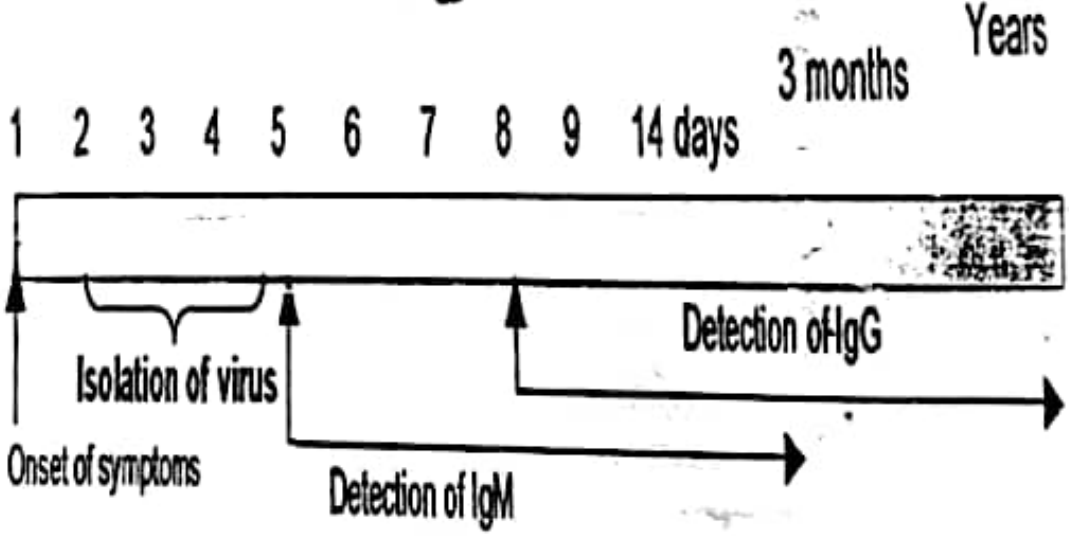
d.

Laboratory Tests in Dengue Fever

- Clinical laboratory tests
  - CBC—WBC, platelets, hematocrit
  - Albumin
  - Liver function tests
  - Urine—check for microscopic hematuria
- Dengue-specific tests
  - Virus isolation
  - Serology



Time line of Symptoms--- Diagnostics tests



Dengue Markers

Response to Primary Infection

1. NS1 antigens

Day 1 after onset of fever and up to Day 9.
Not detectable once anti-NS1 IgG antibodies are produced.

2. IgM antibodies

From the day 5 after onset of fever and rise for 1-3 weeks, then for up to 60 days

3. IgG antibodies

From the day 10-14 after onset of fever and persists for life.