DENGUE

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Introduction

- Blood borne disease is the disease that can be spread through contamination of blood.
- Dengue is a viral infection that spread by mosquito.
- It is the most common infection with an estimated 50-100 million of cases annually.
- Infectious agent is Flaviviparus virus, with four serotypes of virus, DEN-1 to DEN-4.
- Dengue virus is an endemic in more than 100 countries in the tropics and subtropics area.

Transmission

- Transmitted through vector
  - *Aedes aegypti, Aedes albopictus, A.polynesiensis, A.scutellaris*
  - Human is the reservoir host
- Travel to dengue-endemic area
- Blood transfusion
- Mother-to-baby

Classification of dengue

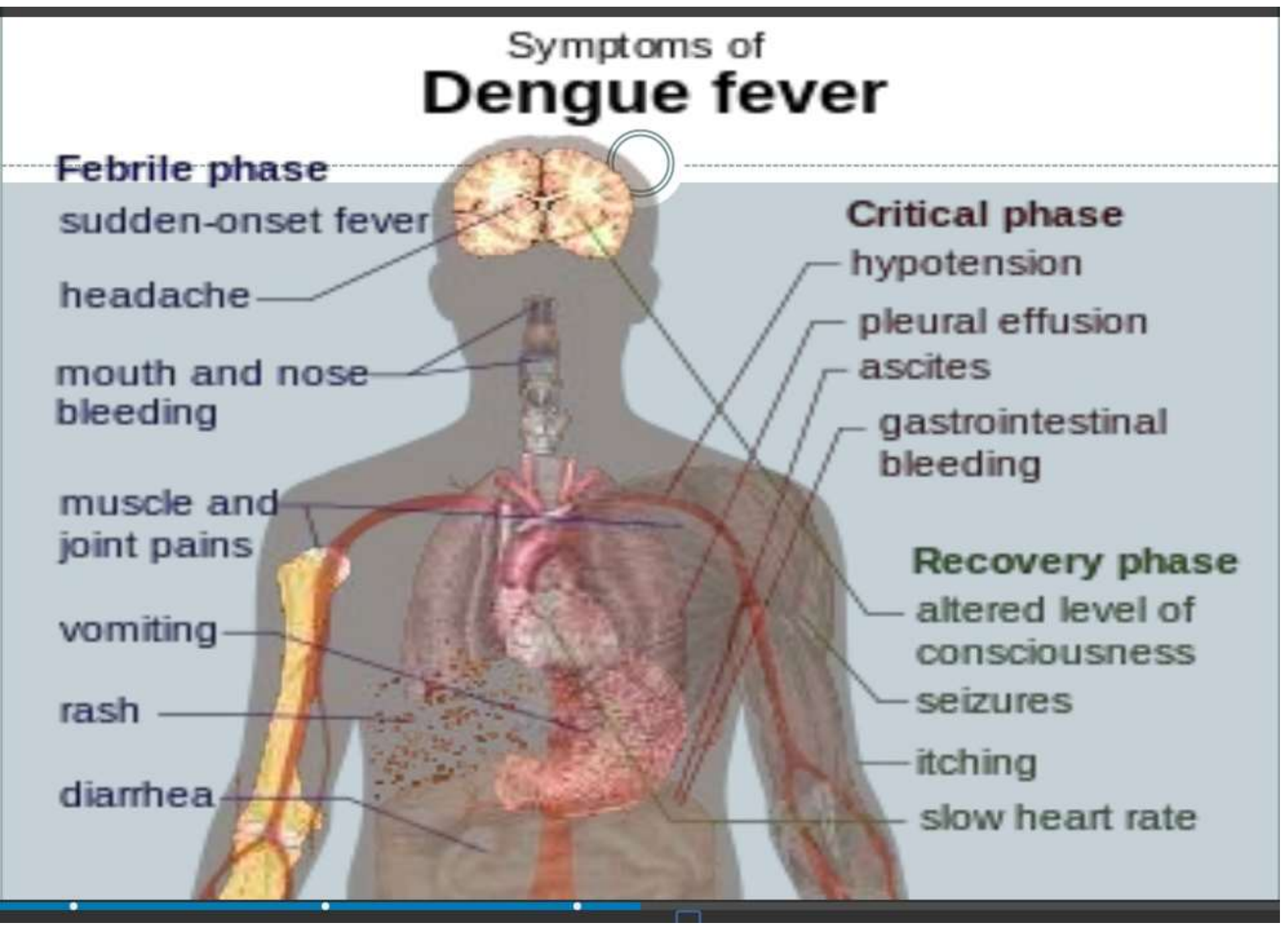
- Dengue fever
- Dengue hemorrhagic fever
- Dengue shock syndrome

Mechanism of infection

- Virus is spread by biting of mosquito from infected person to another person **only during the day.**
- The virus passes to the lymph nodes and replicates and finally spread to the circulation and tissues.
- Incubation period is 3 to 15 days (usually 7-10 days)

Phases of infection

- Febrile phase: Viremia-driven high fevers lasts for 2 to 7 days
- Critical/plasma leak phase: Sudden onset of varying degrees of plasma leak into the pleural and abdominal cavities lasts for 1 to 2 days
- Recovery or reabsorption phase: Reabsorption of accumulated fluids including leaked plasma and intravascular fluids, lasts for 2 to 4 days


Symptoms of
Dengue fever
Febrile phase
sudden-onset fever
headache
mouth and nose bleeding
muscle and joint pains
vomiting
rash
diarrhea
Critical phase
hypotension
pleural effusion
ascites
gastrointestinal bleeding
Recovery phase
altered level of consciousness
seizures
itching
slow heart rate

WARNING SIGNS

- Abdominal pain
- Ongoing vomiting
- Liver enlargement
- Mucosal bleeding
- High hematocrit with low platelets
- Lethargy

ASSOCIATED PROBLEMS

- Dengue can occasionally affect several other body systems,.
- A decreased level of consciousness
- infection of the brain by the virus or indirectly as a result of impairment of vital organs, for example, the liver.
- Other neurological disorders such as transverse myelitis and Guillain-Barré syndrome.
- Infection of the heart and acute liver failure are among the rarer complications.

Dengue hemorrhagic fever

- Dengue hemorrhagic fever was subdivided further into grades I–IV.
- Grade I is the presence only of easy bruising or a positive tourniquet test in someone with fever,
- grade II is the presence of spontaneous bleeding into the skin and elsewhere,

Dengue hemorrhagic fever

- grade III is the clinical evidence of shock,
- and grade IV is shock so severe that blood pressure and pulse cannot be detected.
- Grades III and IV are referred to as "dengue shock syndrome".

Diagnosis

- Diagnosing dengue fever can be difficult, because its signs and symptoms can be easily confused with those of other diseases
  - malaria,
  - leptospirosis
  - typhoid fever.

DIAGNOSIS

- The diagnosis of dengue is typically made clinically, on the basis of
- reported symptoms and physical examination;
- this applies especially in endemic areas. However, early disease can be difficult to differentiate from other viral infections.

Diagnosis

- The earliest change detectable on laboratory investigations
- low white blood cell count,
- followed by low platelets and metabolic acidosis.
- In severe disease, plasma leakage results in hemoconcentration (as indicated by a rising hematocrit)
- hypoalbuminemia.
- Pleural effusions or ascites can be detected by physical examination when large
- but the demonstration of fluid on ultrasound may assist in the early identification of dengue shock syndrome.

Diagnosis

- A probable diagnosis is based on the findings of fever plus two of the following:
- nausea and vomiting,
- rash,
- pains, low white blood cell count,
- positive tourniquet test,
- or any warning sign in someone who lives in an endemic area.

Diagnosis

- Warning signs typically occur before the onset of severe dengue
- .The tourniquet test, which is particularly useful in settings where no laboratory investigations are readily available,
- involves the application of a blood pressure cuff for five minutes, followed by the counting of any petechial haemorrhages; a higher number makes a diagnosis of dengue more likely.

Diagnosis

- These laboratory tests are only of diagnostic value during the acute phase of the illness with the exception of serology.
- Tests for dengue virus-specific antibodies, types IgG and IgM, can be useful in confirming a diagnosis in the later stages of the infection.
- The detection of IgG alone is not considered diagnostic unless blood samples are collected 14 days apart and a greater than fourfold increase in levels of specific IgG is detected.

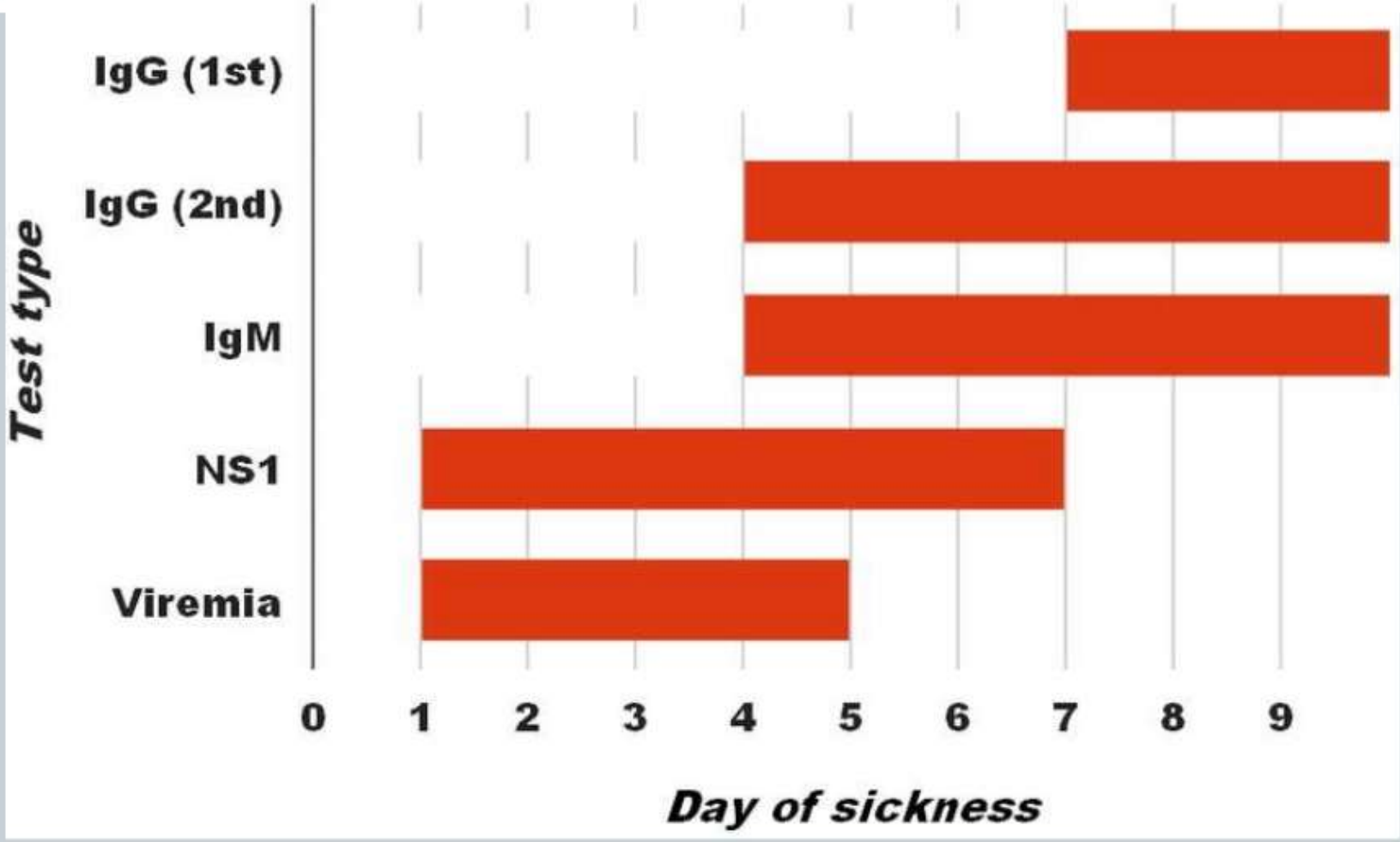
Lab test

- Antigen NS1 test
- ELISA- IgG, IgM antibodies
- Blood cultures- isolate the virus
- Full blood count
- Liver function test
- PCR- Nucleic acid detection

Lab findings

- Presence of NS1 viral protein, antibodies against dengue in the blood
- Leukopenia, lymphocytosis, thrombocytopenia
- Elevated transaminases (ALT and AST)
- Plasma leakage results in hemoconcentration and hypoalbuminaemia
- Acute hepatitis

When tests become positive



Management

- There is no specific drugs for dengue.
- Treatment focus on maintaining proper fluid balance.
- Paracetamol is prescribed.
- Blood transfusion under severe conditions.
- Monitoring vital signs and blood volume.
- Invasive medical procedures and NSAIDs are avoided.

Prevention

- No approved vaccines
- Control of vector
  - Tip out water from things like pot plant bases, plastic containers, tin cans or buckets
  - Store anything that can hold water undercover or in a dry place
  - Throw out any rubbish lying around the yard
- Repellent

Conclusion

- Dengue is a viral infection that transmitted by the bite of an infected Aedes species.
- Dengue fever is characterized by high fever, rashes, muscle and joint pain.
- It can lead to death when it develops into severe cases such as DHF and DSS.
- Control of the vector by reducing the breeding sites, good sewage management and use of insecticides.