Dengue Fever Diagnosis & Treatment

BY DR JOSE M DAVY
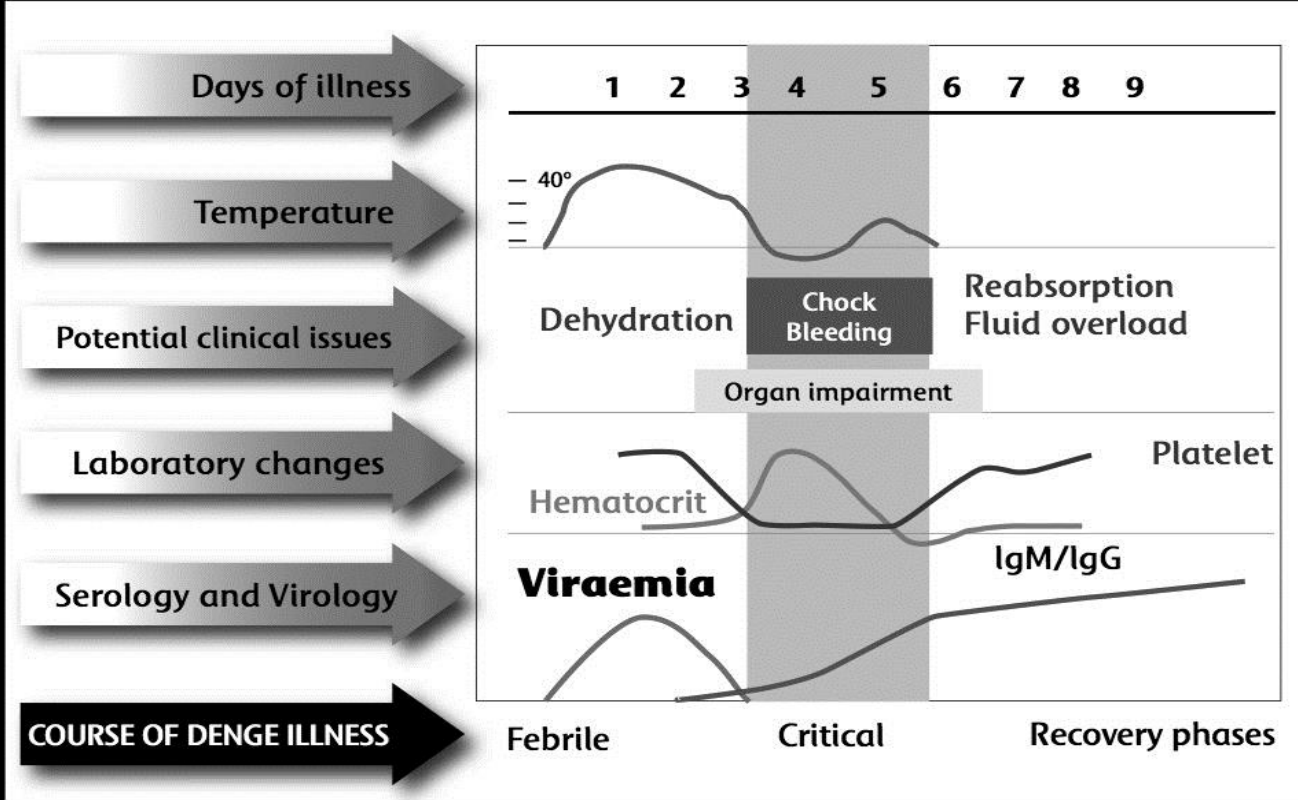
Objectives of Presentation

- To outline the clinical picture of dengue, classification etc
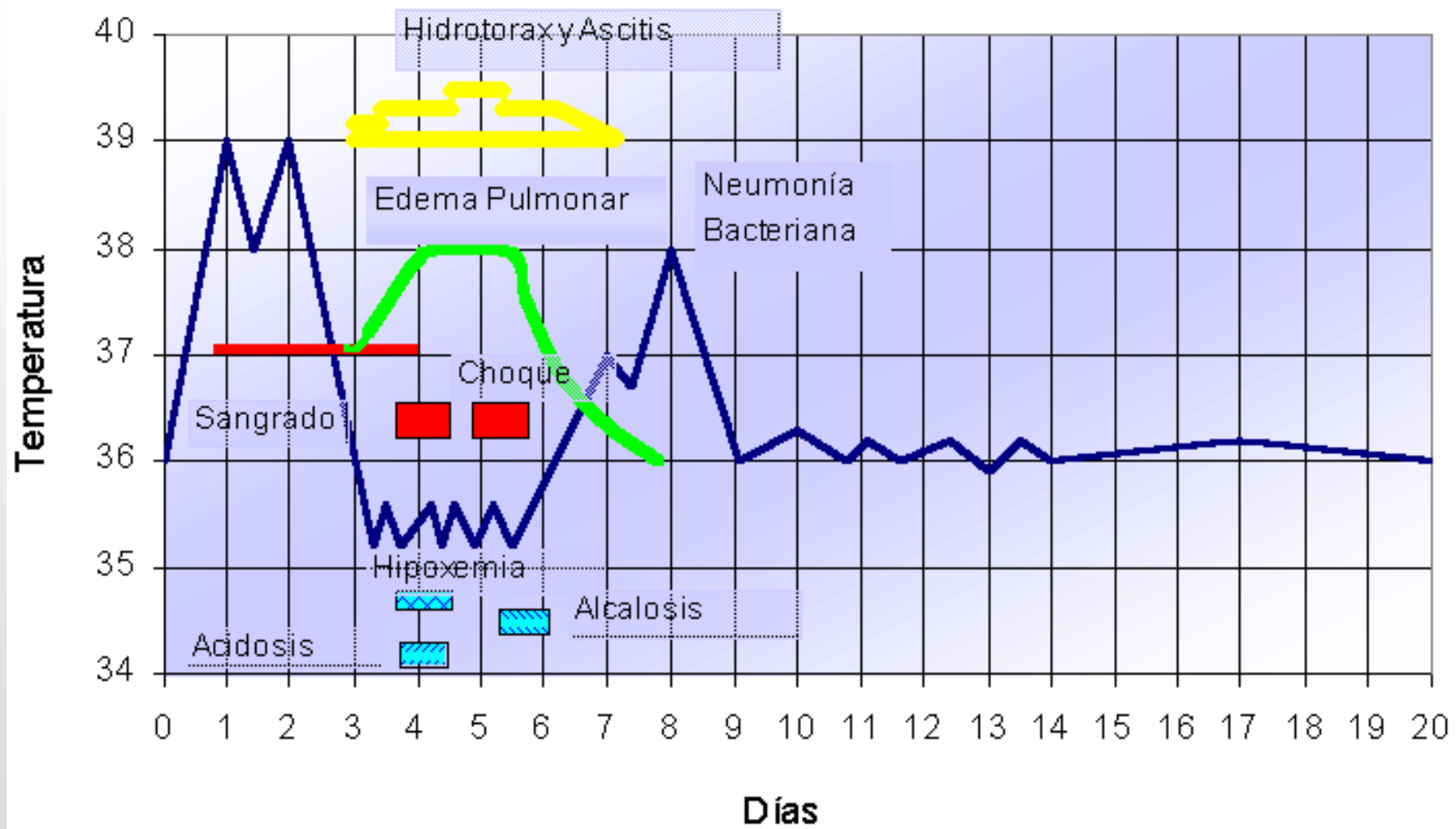
- Management of dengue and severe dengue

STAGES AND CLASSIFICATION

STAGES

Figure 1. The course of dengue illness
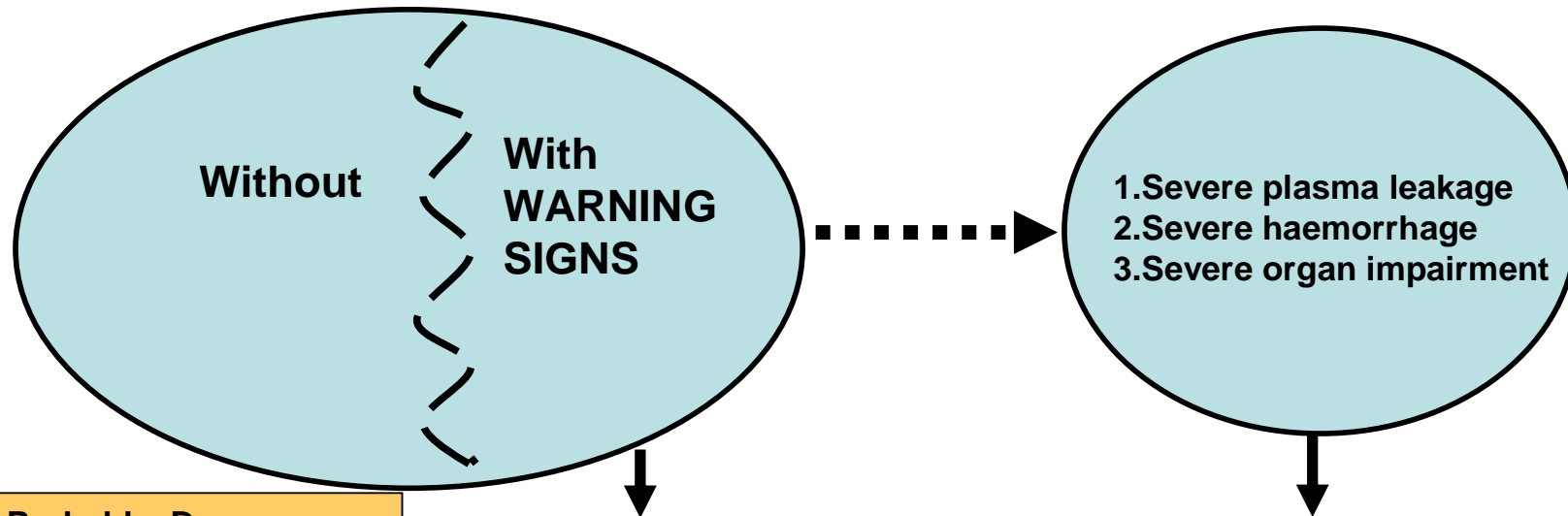
Adapted from WCL Yip, et al. 1980 (28).

Revised Dengue Classification

DENGUE ± Warning Signs

Without | **With WARNING SIGNS**

SEVERE DENGUE

1. Severe plasma leakage
2. Severe haemorrhage
3. Severe organ impairment

Probable Dengue
Live in / travel to dengue endemic area. Fever and 2 of the following criteria:
- Nausea, vomiting
- Rash
- Aches and pains
- Tourniquet test +ve
- Leucopenia
- Any warning sign

Lab. confirmed dengue
(important when no sign of plasma leakage)

Warning Signs*
- Abdominal pain or tenderness
- Persistent vomiting
- Clinical fluid accumulation
- Mucosal bleed
- Lethargy; restlessness
- Liver enlargement >2cm
- *Laboratory:* Increase in HCT concurrent with rapid decrease in platelet count

1. Severe plasma leakage leading to
- Shock (DSS)
- Fluid accumulation with respiratory distress

2. Severe bleeding
  as evaluated by clinician

3. Severe organ involvement
- *Liver:* AST or ALT>=1000
- *CNS:* Impaired consciousness
- *Heart and other organs*

* Requiring strict observation and medical intervention

DENGUE WITHOUT WARNING SIGNS

Person who lives or who has traveled to areas with dengue transmission in the last 14 days and presents **fever** usually of 2 to 7 days duration, and at least 2 of the following criteria:

1. Nausea/vomiting
2. Exanthema
3. Headache/ retro-orbital pain
4. Myalgia / arthralgia
5. Petechiae or positive tourniquet test
6. Leukopenia

Also, any child from or residing in a dengue transmission area with acute fever, usually of 2 to 7 days' duration, with no apparent focus.

DENGUE WITH WARNING SIGNS

Any dengue case which at the time fever subsides presents one or more of the following signs:

1. Intense abdominal pain or tenderness
2. Persistent vomiting
3. Fluid accumulation (ascites, plural and/or pericardiac effusion
4. Mucosal bleeding
5. Lethargy / restlessness
6. Postural hypotension (lipothymia)
7. Liver enlargement >2 cm
8. Progressive increase in hematocrit

SEVERE DENGUE

Any dengue case with one or more of the following manifestations:

1. **Shock or respiratory distress due to severe plasma leakage**. Shock evidenced by weak or undetectable pulse, tachycardia, cold extremities, and capillary perfusion > 2 seconds, pulse pressure < 20 mmHg, indicating hypotension in the late phase.

2. **Severe bleeding:** based on evaluation by the attending physician (examples: hematemesis, melena, ample metrorrhagia, central nervous system (CNS) bleeding.

3. **Severe organ compromise**, such as liver impairment (AST or ALT >1000 IU), CNS (impaired mental state), heart (myocarditis), or other organs

CLINICAL HISTORY:

Date in which fever started or presence of Dengue was suspected.

Clinical state compatible with Dengue: sudden start of fever, myalgia, arthralgia, retro ocular pain, vomiting, diarrhea, especially in kids with rubeliforme rash, mottled skin, there can be epistaxis and prostration.

Search for Warning signs.

Questions within the family or neighbors are similar symptoms.

PHYSICAL EXAM:

- Hydration state.

- Neurological status: level of consciousness (important to evaluate Glasgow scale).

- Hemodynamics: Fever, tachycardia, narrowing diastolic and systolic blood pressure, important to evaluate urinary input.

- : Respiratory data-look for nasal flutter, tachypnea pleural effusion , lung congestion with rasping breath.

PHYSICAL EXAM:

- Digestive: to seek , presence of abdominal pain, vomit and hepatomegaly. And look if there is presence of ascitis.

- Perform tourniquet test. Remember is a sensitive test not specific

- Hematologic: Bleeding manifestations.

- Dermatology: Presence of rash of Rubeliform type, petechiae and ecchymosis.

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DIAGNOSIS

LAB DATA

1.- Complete blood count, the most common alteration is the presence of leucopenia, even though it can also been found leukocytosis, which is predictive factor of severty.

2.- Hemoconcentration, rise hematocrit levels, Thrombocytopenia < of 100000, Elongated times of PT, PTT, (most frequently of the intrinsic coagulation pathway and increase in the fibrin degradation products.

3.- Hepatic function tests with increase of transaminases

4.- Renal function tests with increment both in creatinine and urea. Electrolytes with the presence of hyponatremia and hypocalcemia

5.- Blood chemistry: There is an increase in glycemic levels.

6.- Levels of lactic acid can shows more than **4 mmol.**

LAB SEROLOGIC TESTS

■ In blood the NS1 test, within the first 3 to 4 days in which fever is present is a (viremic detector), this just indicates the presence of illness.

■ IgM is at its peak day 5 of onset of illness.

■ The presence of IgM indicates first infection and IgG indicates secondary infection.

■ PCR-RT testing can be performed.

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OTHER DIAGNOSIC TOOLS.

■ Chest X Ray to look for pleural effusion, or lung infiltrates.

■ Abdominal ultrasound--for edema of the gallbladder walls ,or alterations of the liver, spleen or kidney.

■ Echocardiogram-pericardial effusions or myocarditis.

■ ECG to detect conduction disorders such as arrhythmias.

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TREATMENT/ MANAGEMENT

DENGUE FEVER

CLINICAL MANAGEMENT.

Depending on the clinical manifestations and other circumstances, the patient can:

- Group A- can be managed at home
- To be admitted to an Emergency room in order to be observed - Group B.
- Group C- severe dengue or possible rapid clinical decompensation

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GROUP A - HOME TREATMENT.

- Patients must easily tolerate liquids by mouth (oral via).

- Their hydration state must be adequate.

- Their Hemodynamic state must be stable.

- They must no show any warning signs, especially during the defervescense phase.

- The hematocrit must not show hemoconcentration .

- It is important to be alert regarding other comorbid conditions such as chronic degenerative diseases, COPD, pregnancy, obesity, immune depression, social isolation, physical and mental disability.

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GROUP B

NON SEVERE DENGUE WITH WARNING SIGNS.

REFERENCE:

1.- Severe abdominal pain

2.- Persistent and intractable vomit in more then six occasions.

3.-Hemodynamic alterations that indicate fluids leakage.

4.- Active bleeding, specially involving the digestive tract and other areas.

5.-Neurologic alterations such as: Lethargy, restlessness, disorders of consciousness.

6.- Hepatomegaly and findings in the tests of hepatic functions.

7.- Warning lab signs such as concurrent increase of Hematocrit and quickly diminishing platelet count.

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GROUP B
EMERGENCY ROOM.

Non Severe Dengue with warning signs:

▪ Obtain a hematocrit sample prior to hydration of the patient.

If hematocrit is within normal range or with a minimum increase:

▪ Initiate or continue patient to hydrate as follows 2-3 ml/kg/hr for 2 to 4 hours.

If hematocrit is above normal levels or increases rapidly:

▪ Start Saline Solution 0.9% or Hartman.
- Start with 10 ml/kg/hr for 1 to 2 hours. Afterwards
- Reduce to 3 to 5 ml/kg/hr for 2 to 4 hours. Afterwards
- Reduce to 2 to 3 ml/kg/hr or less according to clinical response.

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GROUP C: FLUIDS MANAGEMENT IN ICU SEVERE DENGUE.

1.- Place two IV Lines for the administration of IV fluids.

2.- Administer two bolus of more than 20 cc per kg/weight. In the following two hours.

3.- In case of improvement infuse crystalloids 15 cc per kg/weight one hour.

4.- Then continue with crystalloids infusions by the next formula, reducing gradually as follows:

To 5 to 7 ml/kg/hr for 1 to 2 hours, then

To 3 to 5 ml/kg/hr for 2 to 4 hours and then

To 2 to 3 ml/kg/hr or less, which can be maintained for more

than 24 to 48 hours.

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MANAGEMENT cont'd

- Daily HCT must be perfomed

- Close observation of input and output is essential

- Watch for signs of fluid overload

- Patients can be discharged when patient is afebrile for 3 days, appetite improves, proper diuresis, normal HCT, platelets above 50,000.

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