

Synonyms: Breakbone fever, Dandy fever, Seven-day fever, Duengero, Ki denga pepo (Swahili - sudden overtaking by a spirit)

Overview

SS-RNA flavivirus infection (dengue virus types 1-4) endemic in the tropical and sub-tropical regions borne by female mosquitoes (*Aedes.aegypti*) and causing a haemorrhagic fever.

Infection syndromes comprise

- Asymptomatic infection
- Dengue fever (DF)
- Dengue haemorrhagic fever (DHF)
- Dengue shock syndrome (DSS)

Epidemiology

- Endemic in the tropics and subtropics affecting mainly children.
- Most prevalent in SE Asia, Timor, Latin America and the Caribbean.
- It is the commonest of the flaviviruses with an estimated 100 million cases per year

Risk Factors

- High population density
- Urban living
- Poor public hygiene
- Exposure to mosquitoes in endemic areas
- Lack of immunity in children/travellers

Presentation

2-7 days after mosquito bites in tropics and subtropics area.

It may be that re-infection with a secondary serotype leads to DHF/DSS rather than just DF.

Symptoms

- Abrupt onset of fever (39.5-41.4°C) which may be biphasic, and myalgia.
- Frontal or retro-orbital headache lasting 1-7 days
- Generalised macular, blanching (may be petechial) rash which usually fades after 1-2d.
- Symptoms regress for 1-2d then rash reappears for 1-5d in maculopapular, morbilliform pattern, sparing palms and soles of feet ± desquamation. Fever recurs but not as high.
- DF cases, but not DHF/DSS, experience severe bony and myalgia in legs, joints and lower back which may last for weeks (hence breakbone fever).
- Nausea, vomiting, cutaneous hyperaesthesia, taste disturbance and anorexia are common.
- Abdominal pain may occur and if severe suggests DHF pattern.
- DHF also have pharyngitis, cough, hepatomegaly, bleeding ± DIC

Signs

- High fever, rash, flushing of head and neck
- There may be hepatomegaly (DHF) and lymphadenopathy.
- DHF sufferers exhibit a bleeding tendency as evidenced by petechiae, purpura, epistaxis, gum bleeding, GI haemorrhage and menorrhagia. There may be DIC or pleural effusion, ascites and pericarditis due to plasma leakage.
- DSS pattern cases 20-30% of DHF progress → narrow pulse pressure, poor capillary refill → profound shock & severe hypoBP. Occ CNS involvement e.g. encephalopathy, coma, convulsions.

Differential Diagnosis

DF

- Malaria
- Infectious mononucleosis
- Coxsackie and other enteroviruses
- Rickettsial infections
- Rubella
- Parvovirus B19
- Weil's disease (leptospirosis)
- Influenza
- Scrub typhus
- Chikungunya viral infections

DHF

- Weil's disease (leptospirosis)
- Chikungunya viral infections
- Kawasaki disease
- Yellow fever
- Hantavirus/other viral haemorrhagic infections
- Meningococcal septicaemia
- Encephalitic viruses, e.g. West Nile

DSS

As DHF plus any cause of shock, particularly septic shock and toxic shock syndrome caused by occult staphylococcal infection (check re tampon use).

Investigations

Urine: Proteinuria, casts

Bloods: FBC (↓plt, ↑PCV, ↓WCC with ↑L), coags/DIC screen, UEC (↑Ur, ↓HCO₃), ↑LFTs

Serology: Viral IgM & IgG ELISA, monoclonal Ab or haemagglutination; viral culture or PCR

Imaging: CXR (?effusion, pneumonia), CT (if ↓LOC)

Other: Malaria screen, blood culture, stool (FOB is early sign of DHF)

Management

Resuscitation - May require large volumes of IV fluid, inotropes, electrolyte replacement

Monitor - Vital signs, CVP and urine output.

Blood components - may be required in DHF e.g. platelets, FFP

Supportive - Paracetamol. Renal support. Treat secondary bacterial infections.

Prognosis

- Treated mortality rate 0.5-3%. Mainly in infants.
- Untreated or with complications, then mortality can reach 50%.

Complications

- Hepatic failure
- Encephalopathy
- Myocarditis
- Disseminated intravascular coagulation

Prevention

- Vaccines are still being researched.
- Anti-mosquito public health measures.
- Mosquito nets are unhelpful as the *Aedes* mosquitoes is day-biting.
- Repellents may reduce the risk (50% DEET - use during the day).
- Unlike the other viral haemorrhagic fevers, dengue is unique in that it cannot be aerosolised, and therefore is unlikely to be an agent of bioterrorism.