

Ep 26 Dengue – Dr Lionel Lum

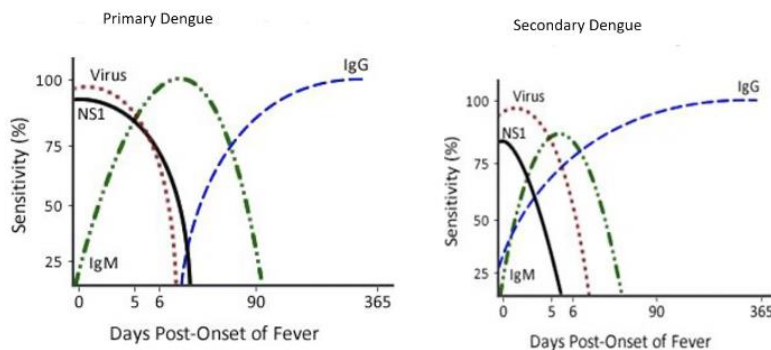
Why is it important to diagnose dengue? 1:10

- Important viral borne illness
- 32000 cases last year
- Important on patient level and public health level
 - Patient level: risk of severe complications and can be potentially fatal – especially with ageing population with multiple comorbidities
 - Community level: epidemiology reason and effectiveness of vector control issues

How do we diagnose dengue? 2:25

Clinical features (including fever, myalgia, thrombocytopenia, leukopenia) suggestive in endemic area

Serology



- NS1 will be elevated first
- IgG starts to be detected after 7 days
- In secondary dengue, IgG can be detected even after 3 days
- Sensitivity of NS1 in secondary dengue is 60% (falsely negative) while sensitivity of NS1 in acute dengue is around 90%

Please refer to table for interpretation of dengue duo

IgM	IgG	NS1	Interpretation
-	-	+	Early Primary Dengue
+	-	+	Primary Dengue
-	+	+	Early Secondary Dengue
+	+	+	Secondary Dengue
-	+	-	Past dengue infection
+	-	-	<ul style="list-style-type: none">• > day 4 primary dengue (before IgG rises)• False positive IgM
+	+	-	<ul style="list-style-type: none">• Recent Dengue• Past dengue with false positive IgM• Secondary Dengue (NS1 sensitivity lower)

- In the event of isolated IgM positivity, or IgM + IgG positivity can confirm with dengue PCR
- False positive NS1 – 2% can happen in patients with lymphoproliferative disease, CMV infection, flavivirus infections

Urine PCR no clinical guidelines on the utility of this

- In transplant units, has been used for transplant donor screening

How do we classify and risk stratify patients with dengue? 7:40

WHO 2009 classification

1. Probable dengue
2. Dengue with warning signs
3. Severe dengue
 - a. Severe plasma leakage – shock, fluid accumulation with respiratory distress
 - b. Severe hemorrhage – as evaluated by clinician
 - c. Severe organ impairment – liver, CNS, heart and other organs

Clinically: check hydration status, postural BP, pulse pressure – Postural hypotension and narrowing of pulse pressure (<20mmHg) may be early features of intravascular volume depletion

Investigations

- FBC
- RP (poor oral intake, lethargic, vomiting)
- LFT not necessary routinely (nausea, vomiting, abdominal pain)

Who do we admit?

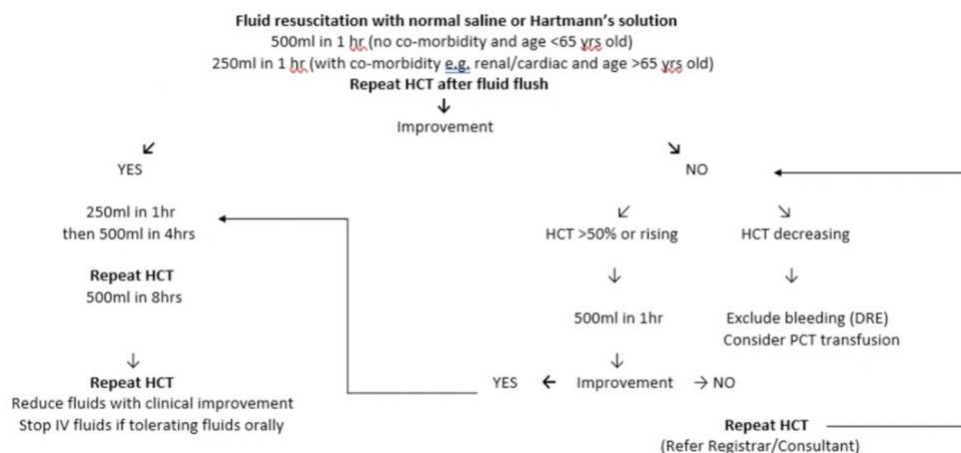
- Phase of dengue is important – critical phase
- Severe dengue
- Warning signs
- Platelet <20-50 with significant increase in Hct
- Persistent postural drop, narrowed pulse pressure, inability to take orally

Management Pointers 12:57

How much fluids should we give?

- Not all dengue patients need IV hydration – can refer to NUH intranet guidelines
- Consider IV fluid if
 - o HCT >50% or 20% above baseline
 - o Unable to retain orally
 - o Compensated shock (SBP>90 but narrow pulse pressure <20) – consider HD/ ICU
 - o Hypotensive shock – refer HD/ICU
- Ensure judicious fluid resuscitation as there is risk of fluid overload especially in extravasation phase

Refer to algorithm for fluid management in compensated shock



- After fluid resuscitation, to repeat HCT after fluid bolus
- However if HCT is decreasing significantly but BP still low – to exclude bleeding (consider DRE, etc)

Is there a role for platelet transfusion?

- Prophylactic platelet transfusion without bleeding has no role according to previous studies: Lye DC, Archuleta S, Syed-Omar SF, Low JG, Oh HM, Wei Y, Fisher D, Ponnampalavanar SSL, Wijaya L, Lee LK, Ooi EE, Kamarulzaman A, Lum LC, Tambyah PA, Leo YS. Prophylactic platelet transfusion plus supportive care versus supportive care alone in adults with dengue and thrombocytopenia: a multicentre, open-label, randomised, superiority trial. Lancet. 2017 Apr 22;389(10079):1611-1618. doi: 10.1016/S0140-6736(17)30269-6. Epub 2017 Mar 8. PMID: 28283286.
- Active bleeding eg GIB, can transfuse

Monitoring and Prognostication 20:27

- Fever
 - o When fever lyses, progresses from febrile phase to critical phase

- Platelet will then continue to drop for next 1-2 more days
- Platelets
 - Majority will have some thrombocytopenia (and leukopenia), WBC tends to improve 1-2 days before platelet
 - Sharp drop in platelet with HCT sharp rise of >20% may suggest plasma leakage
- Transaminitis
 - Only symptomatic patients (nausea, vomiting, abdominal pain), or in severe dengue
 - Can recheck LFT 2-4/52 after recovery to ensure normalization

When can a dengue patient safely be discharged? 24:00

Criteria for discharge

- Phase of illness
 - Usually do not discharge patient when just going into critical phase
 - If in febrile phase, but no red flag signs and compliant patients can still be considered for discharge with outpatient monitoring
- Clinical status
- Patient factors – compliant/ educated patients

How do we follow up patients with dengue? 25:47

- Will usually recommend FBC 1/52 after discharge
- DOM clinic with daily/ EOD FBC
 - Stable dengue patients but more frail, want to watch over febrile phase
 - Slow platelet recovery

What is the significance of primary vs secondary dengue? 27:35

- Management is generally the same
- Worries in secondary dengue is higher risk of severe dengue (due to immune enhancement phenomenon, non-neutralizing antibody binding in host cells)

What is the role for dengue vaccination? 28:50

- Dengvaxia – live vaccine
- Efficacy 40-50% (Serotypes 1-2), 70% (serotypes 3-4)
- Concern of more severe dengue infections in patients who have never gotten dengue before and are given the vaccine, hence only recommended in highly endemic areas according to WHO
- In Singapore: Use only in patients with evidence of past dengue (serology positive), restricted 12-55 years of age >> would advise to check serology prior to dosing
- 3 doses – 0, 6, 12 months

Take Home Points

- While serological diagnosis of dengue is usually straight forward, rare occasions of isolated IgM positivity or IgM and IgG positivity may benefit from a dengue PCR to confirm infection
- Important considerations in dengue management include the severity (presence of warning symptoms or severe dengue) and the phase of illness (paying attention to the critical phase)
- Important parameters to monitor include the blood pressure (particularly looking for postural hypotension and pulse pressure narrowing) and haematocrit (>50% absolute, or 20% rise above baseline is worrying)
- Haematocrit targeted fluid management is recommended