

*Is it always a
Roman when in
Rome?*

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A 4 yr old developmentally normal school going male child residing at Arakonam belonging to upper middle class is brought by his mother with

- *c/o continuous high grade fever for 4 days,*
- *c/o headache on and off for 4 days*
- *h/o reduced urine output for past 1 day*
- *h/o vomiting 3 episodes since morning associated with epigastric pain*

- h/o loss of appetite , no h/o loss of weight
- No h/o cough, abdominal distension, bleeding manifestations
- No h/o joint pain/ rashes /loose stools
- No h/o dysuria / drug intake
- No significant past history
- Antenatal, birth and neonatal history – uneventful.

- Immunisation upto date.
- He is studying LKG and his scholastic performance above average.
- H/o father admitted with similar illness +

EXAMINATION

On the day of admission,

- Child was dull looking, lethargic
- Thin built and moderately nourished
- No pallor/ icterus/ cyanosis/ clubbing / edema/ lymphadenopathy

ANTHROPOMETRY:

- Weight : 12.5 kg, below 3rd percentile
- Height : 95 cm, along 3rd percentile
- MAC : 12.5 cm.
- Weight for height : less than 3rd centile
- Imp: chronic malnutrition.

VITALS:

- Heart Rate : 153 beats/min ,normal volume, regular rhythm , felt in all peripheral vessels , no radio radial or radio femoral delay
- Respiratory Rate : 48/min , regular, work of breathing normal
- Blood Pressure : 90/50 mm Hg measured in right arm in sitting position.
- Temperature : 103 F

- HEAD TO FOOT EXAMINATION : normal
- Abdomen examination – liver palpable 3 cm below RCM, firm, sharp border, smooth surface. Liver span 9.5 cms.

Spleen 2 cm below LCM.

Hepatosplenomegaly+

Right hypochondrial and epigastric tenderness+.

- Cardiovascular system – S1S2 heard
- Respiratory system – normal vesicular breath sounds +
- Central nervous system – no focal neurological deficit

- Investigations ***on admission***,
- Hemoglobin: 10.6 g/dl;
Hematocrit: 33.7%;
Platelets : 1,10,000 cells/cubic mm;
Total count : 4200 cells/cubic mm
(neutrophilic predominance).
- RFT ,LFT normal.
- Dengue IgM : positive by card.

- On **day 2 of admission**, child was very toxic , with continuous fever and vomiting not relieved by medications associated with chills and rigors.
- Child was considered to be severe dengue fever going for shock syndrome and treated with fluids and symptomatic management.
- Serial monitoring of complete blood count, BP and urine output was monitored

- On **day 4 of admission**, pallor present. Abdominal distension +. Hepatosplenomegaly increased in size (liver span 11 cms, spleen 4 cms below LCM)
- Serial monitoring of blood count from **day 2 to day 4 of admission** showed drop in hemoglobin from 10.9 to 5.5 mg/dl. Platelets from 91,000 to 31,000. LFT – raised.
Hematocrit from 33.7% to 18%.

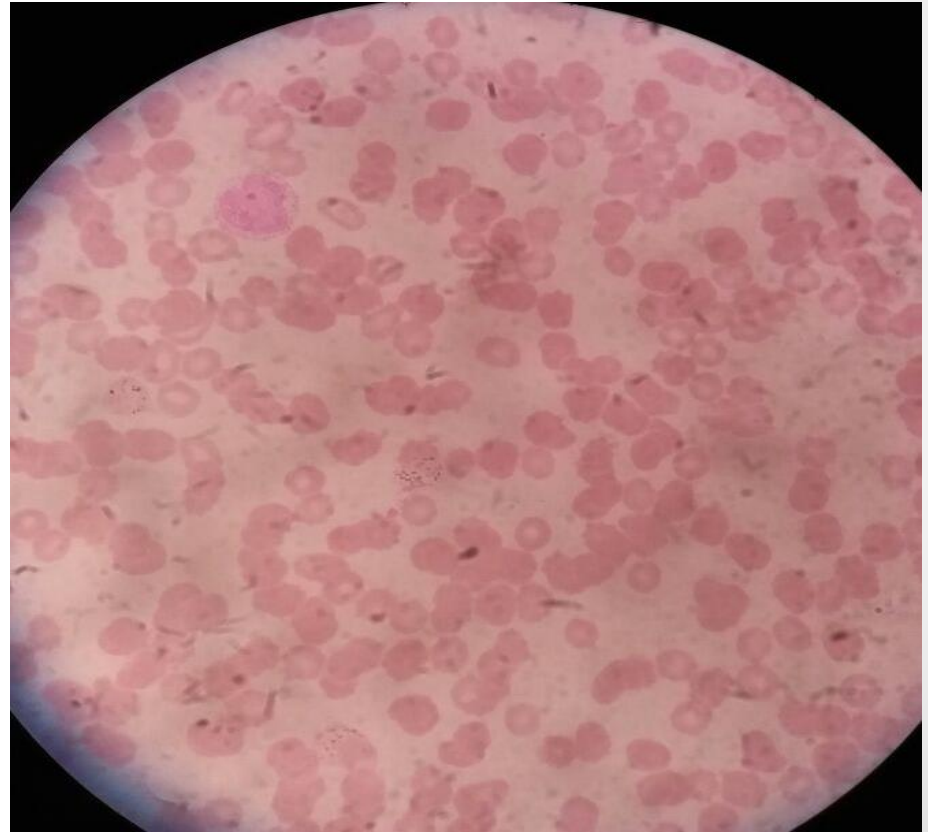
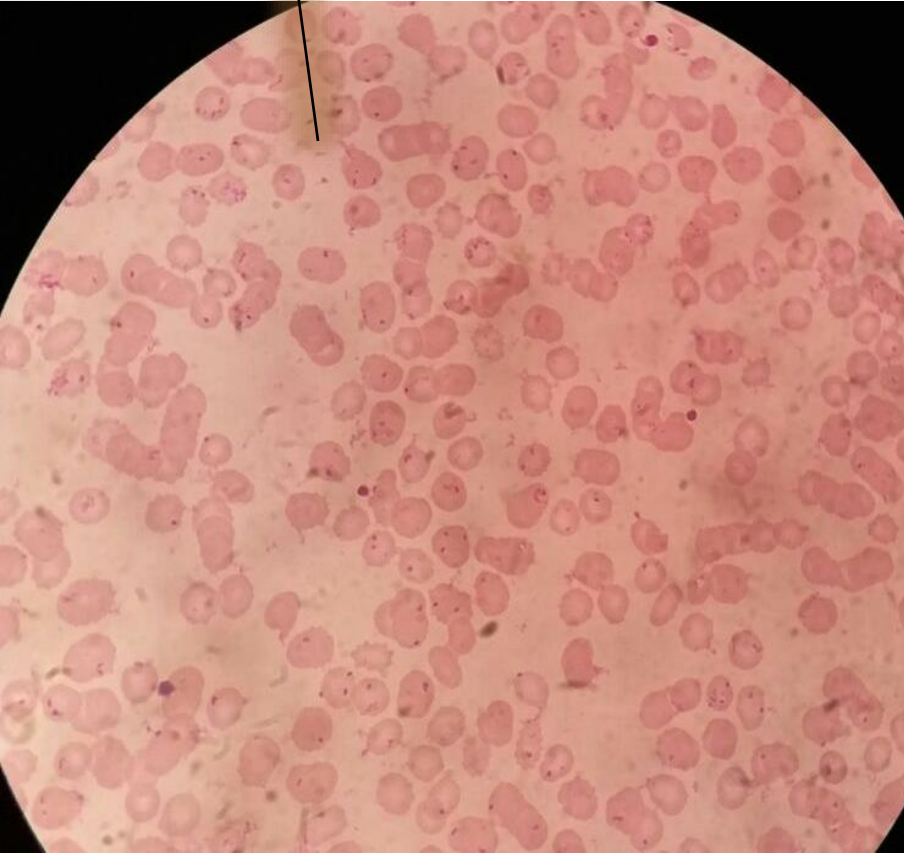
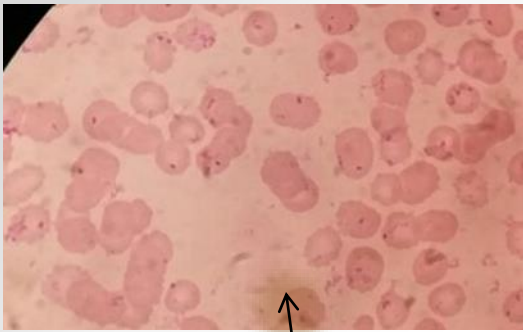


- ? Dengue shock syndrome/ ? Macrophage activation syndrome/ ?co infection/
?different diagnosis

Fever with
thrombocytopenia during a
dengue epidemic – *is it
always dengue?*

- On further probing, mother gave a history of travel to their native place (Ranchi) before 1 month.
- After sending blood for peripheral smear, 1 unit of blood transfusion given.

Peripheral smear



- **Peripheral smear** : microcytic hypochromic with mild anisopoikilocytosis. WBC reduced with neutrophilic predominance. Platelets reduced.

Multiple ring forms and chromatin dots are seen within the RBCs.

Impression: plasmodium falciparum infection with iron deficiency anemia

- Malarial parasite by card test positive for both falciparum and non falciparum species.

- Dengue IgM by ELISA : negative

Diagnosis

- Severe malaria.

- The child was started on injection artesunate, doxycycline and primaquine (po) at day 4 of admission.
- Artesunate and doxycycline * 7 days, primaquine * 14 days.

- Child improved well without any complications.
- At discharge,

Hemoglobin – 11.6 g/dl

PCV – 37.7%

TC – 8900 cells/cubic mm

P 27%, L 58%, M 12%, E 3%

Platelets – 1,64,000 cells/cubic mm

Discussion

Fever with thrombocytopenia

- Arbovirus –Dengue, yellow fever
- Malaria
- Typhoid
- Leptospirosis
- Rickettsial, borreliosis
- HIV
- Rodent-borne virus – Hanta and Lassa fever
- Visceral leishmaniasis
- Severe fever with thrombocytopenia syndrome (SFTS) – bunyaviridae.

Reference

Konkle BA, Fauci AS, Braunwald E, Kasper DL, et al *Disorder of platelets and vessel wall*, NY 2008:p718-23.

Lee GR, Foerster J, Lukens J, Paraskevas F, Greer JP, Rodgers GM. Shirley Parker Levine – *Miscellaneous causes of thrombocytopenia*

False positive dengue

- Flavivirus family virus – West Nile fever, Yellow fever, Tick Borne Encephalitis, JE
- Togavirus – chikungunya
- Plasmodium falciparum
- Giardia lamblia*
- Strongyloides stercoralis*
- NK cell lymphoma and AML – NS1 Ag#

Reference

*Ole W, Klaus S, Pei-Yun S, Tomas J, et al. clinical features and pitfalls in the laboratory diagnosis of dengue in travellers, 2006

#Shimin J, Prabha U, Yee S, et al hematological malignancies with false positive dengue Ns1 Ag. 2014

Co infection in dengue

- Chikungunya
- Malaria
- Typhoid
- Zika
- Scrub typhus
- Hepatitis A

WHO criteria for severe malaria

- Impaired consciousness
- Prostration
- Respiratory distress
- Multiple seizures
- Jaundice
- Hemoglobinuria
- Abnormal bleeding
- Severe anemia
- Circulatory collapse
- Pulmonary edema

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Treatment for severe malaria

- Artesunate : 2.4 mg/kg body weight * 12 and 24 hrs and once daily
- Quinine : 20 mg quinine/kg body weight followed by maintenance 10 mg/kg body weight 8th hourly * 48 hrs f/b 7 mg/kg body weight.
- Artemether : 3.2 mg/kg body weight on admission f/b 1.6 mg/kg body weight.
- α - β Arteether : not recommended for children.
- Primaquine * 14 days.

- For quinine follow it up with doxycycline * 7 days.
- For ACT combine with lumefantrine in north eastern and sulfadoxine-pyrimethamine for other areas.

Reference

NVBDCP 2016

- Artesunate i.v * 24 hrs followed by oral for 3 days.
- Children <20 kg – 3mg/kg bw/dose
- Larger children/ adults – 2.4 mg/kg bw/day
- Primaquine 1 dose in *P.falciparum* infections.
- Primaquine * 14 days for *P.vivax* and mixed infections.

Reference

WHO malaria 2015

Take home message

- **High index of suspicion** should be shown for children with worsening symptoms to rule out co infection or other causes of fever with thrombocytopenia.
- The treatment for severe malaria is **very specific and decreases mortality** when initiated earlier.

References

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- *Nelson textbook of pediatrics 20th edition*
- *Agarwal S(2011) A rare trigger for macrophage activation syndrome. Rheumatology international 31(3):405-7.*

Thank you