Malaria 1

Clinical Tropical Medicine

FACTM (Clinical) Pt 1

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Malaria series

Malaria 1 Clinical Tropical Medicine

Malaria 2 Clinical Parasitology

Malaria 3 Public Health, Travel & Expedition Medicine

Malaria 4 Clinical Entomology

Study materials

Oxford Handbook of Tropical Medicine.
3rd Edition, Eddlestone M *et al*. 2008. OUP.

- Recommended bookshelf
- FACTM study notes
- Specialist review articles
- Self-assessment questions

Blog http://microgmome.priobe.net
Web www.priobe.net
FACTM http://lifeinthefastlane.com/exams/actm-fellowship/

Clinical features

- Classical presentation:
  - **COLD** - initial shaking/rigor; then
  - **HOT** - fever (may be >40^{o}C), restlessness, vomiting & convulsions; then final
  - **SWEATING** - temperature returning to normal & possibly sleep.

- **Setting**: history of travel to or residence in malaria-endemic area
- **Prodrome**: aching, lethargy
- **Timing**: 6-10hr overall with interval of 38-42hr for *P.vivax* or *P.ovale* and 62-66hr for *P. malariae*. *P.falciparum* timing is less predictable, temperature may not return to normal between paroxysms
- **Exceptions**: less clear cut in children
- **Misleading features**: cough, headache, myalgia, diarrhoea, jaundice may all be present in acute malaria

Severe malaria

WHO criteria:

- Clinical. prostration, impaired consciousness, respiratory distress, multiple convulsions, circulatory collapse, pulmonary oedema, abnormal bleeding, jaundice, haemoglobinuria

- Laboratory. severe anaemia, hypoglycaemia, acidosis, renal impairment, hyperlactataemia, hyperparasitaemia

- **Blackwater fever**: massive haemoglobinuria in malaria. After use of quinine or primaquine. Commoner in patients with G6PD deficiency

- **Cerebral malaria**: "*unrousable coma in the presence of peripheral parasitaemia when other causes of encephalopathy have been excluded*" 20% mortality. Children and non-immune adults. Kernig's NEG, neck rigidity & photophobia usually not present.

Severe malaria ii

- **Respiratory distress**: due to compensation for metabolic acidosis, pulmonary capillary damage by parasite, 2º pneumonia, severe anaemia
- **Severe anaemia**: haematocrit <15% in presence of parasitaemia. pallor, gallop rhythm, pulmonary oedema, neuro signs
- **Jaundice**: signs of liver failure uncommon unless also has hepatitis
- **Renal impairment**: raised Cr and urea. Oliguric, anuric, occasionally polyuria. Acute failure in malaria has poor prognosis, approx 45% mortality.
- **Hypoglycaemia**: blood glucose < 2.2 mmol/L. commoner in pregnancy, after quinine or due to liver impairment. clinical features easy to miss if reduced conscious level.

Investigations

- **Key questions**:
  - Does the patient have malaria?
  - Does the patient have *P. falciparum* malaria?
  - Does the patient have another infection?

- **Blood films**: at least 2, preferably 3 at intervals by 2 methods (thin & thick), for parasite detection, density, determination of species & stages present
- **Rapid tests**: dipstick for *P. falciparum* histidine-rich protein, quantitative buffy coat, and PCR assays; mainly for *P. falciparum* infection, not useful for parasite density
- **Other infections**: blood culture, arbovirus serology, PCR assays
- Blood glucose, U&Es, liver function tests, FBC
- Others, as indicated by severity of infection

Antimalarial treatment

WHO guidelines:

- Artemisinin-based combination therapy (ACT) for uncomplicated malaria
- Artesunate for parenteral treatment in low transmission area & later pregnancy

- **General rules**:
  - If signs of *P.falciparum* malaria, weigh patient & start immediately
  - Avoid discharging patients with mild symptoms but high parasitaemia (≥ 100,000 parasites/μL or ≥ 2% RBC infected)
  - If benign malaria, await results of blood film
  - Uncomplicated malaria can be treated on outpatient basis
  - If outpatient treatment, advise return if worsens or no improvement in 48hr

- For Chemoprophylaxis, see Malaria 3.

Antimalarial agents

- **ACTs**: e.g. artemether 20mg/lumefantrine 120mg fixed combination
  - Rapid effect against schizont stage of *P.falciparum* infection
  - 6 doses in 3d, orally. Taken with milk or fatty food
- **Artesunate** 2.4mg/kg IV
  - In severe malaria, 3 doses in 24hr, then once daily
  - More effective than quinine
- **Chloroquine**: 25mg/kg base in divided doses over 3d
  - For benign malaria only
  - Primaquine needed for liver schizont stage of *P.vivax* & *P.ovale* (beware G6PD def.)
- **Quinine**: 10mg/kg salt 8hourly
  - Tolerated poorly due to cinchonism, requires additional tetracycline
  - Risk of hypoglycaemia, prolonged QT interval
  - Use in relapse within 14d of ACT
  - Loading dose of 20mg/kg, especially in severe or complicated malaria

Managing the patient

- All need antimalarial chemotherapy
- ABCs, including venous access
- Deal with hypoglycaemia
- Weigh patient, assess hydration
- If diminished conscious level, consider LP
- If convulsions, use Diazepam by slow IV
  - GCS, mannitol etc have no clear benefit in cerebral malaria
- Monitor urine output & renal function
- If severe anaemia (Hct <15%), consider transfusing
- If shocked, consider possibility of bacterial infection, give IV antibacterial

Emerging issues

1. Choice of antimalarial therapy after failed chemoprophylaxis
2. Potential for resistance to new artemisinin agents
3. Range of new fixed combination ACTs
4. The role of antipyretics e.g. in children with malaria
5. The role of exchange transfusion in severe malaria
6. Treatment of parasitaemia in refugee clinics
7. Treatment of malaria in pregnancy
8. Emergency treatment of malaria in remote places